

**CHECK GUARANTEE AND
CREDIT CARD AUTHORIZATION SERVICES**

INPUT

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Offices

NORTH AMERICA

Headquarters

1943 Landings Drive
Mountain View, CA 94043
(415) 960-3990
Telex 171407

New York

Parsippany Place Corp. Center
Suite 201
959 Route 46 East
Parsippany, NJ 07054
(201) 299-6999
Telex 134630

Washington, D.C.

8298 C, Old Courthouse Rd.
Vienna, VA 22180
(703) 847-6870

EUROPE

United Kingdom

INPUT
41 Dover Street
London W1X 3RB
England
01-493-9335
Telex 27113

Italy

Nomos Sistema SRL
20124 Milano
Viale Vittorio Veneto 6
Italy
228140 and 225151
Telex 321137

Sweden

Athena Konsult AB
Box 22232
S-104 22 Stockholm
Sweden
08-542025
Telex 17041

ASIA

Japan

ODS Corporation
Dai-ni Kuyo Bldg.
5-10-2, Minami-Aoyama
Minato-ku,
Tokyo 107
Japan
(03) 400-7090
Telex 26487

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I INTRODUCTION

I INTRODUCTION

- This market focus report is produced by INPUT as a part of the Processing Services Program of INPUT's Market Analysis and Planning Service (MAPS). The report analyzes credit card authorization/check guarantee services markets in the United States.
- The rapid deployment of credit authorization point-of-sale (POS) and electronic cash register (ECR) terminals in retail stores, gas stations, gambling casinos, and hotels to increase consumer convenience and combat fraud has created a rapidly expanding market.
- The expansion and interconnection of hitherto separate financial transaction networks is extending credit authorization and guarantee services to new locations and increasing the nationwide market for those services.
- Fundamental changes are occurring in the retail terminal environment which permit successful offerings of expanded and additional information services to both consumers and retailers. The changes provide strategic opportunities for sustained growth in processing and value-added network (VAN) information services.

A. SCOPE

- INPUT's market focus report provides the following:
 - Strategic planning data on current user information services expenditures and forecasts by service type and delivery mode.
 - Issues that highlight emerging market opportunities and help the reader understand the changes taking place.
 - Emphasizes the critical importance of compatible financial transaction networks that interconnect financial institutions and commercial companies with retailers utilizing authorization, POS, and ECR intelligent terminals.
- The report also analyzes industry-specific user expenditures for credit card authorization and check verification/guarantee services. Cross-industry expenditures for services not unique to this market sector have been excluded.
- The specific credit authorization/guarantee services analyzed in this report include the following applications:
 - Credit card authorization.
 - Credit card message switching (interchange) services.
 - Check verification.
 - Check guarantee.
- INPUT recognizes that some vendors offer additional credit card related services in conjunction with credit card authorization services (such as credit

card application processing, plastic card issuance, card transaction processing, billing, clearance, and settlement). These services are not included in this report.

- The research in this report addresses the following issues:
 - The size and growth of the market for check/credit card authorization/guarantee services.
 - How the services are delivered.
 - Why the market is important and how it relates to other financial markets.
 - The key vendors and their market share.
 - The changes that are occurring in the marketplace and how these changes will affect services delivery.
 - The add-on opportunities that can be offered for related products and services.
- Vendor market share data for the leading vendors is highlighted in Chapter V, Vendor Profiles.

B. METHODOLOGY

- The primary research for this report came from a combination of interviews with processing services vendors; available market data; annual reports from VISA, MasterCard, National Retail Merchants Association, and American Banker; and INPUT reports outlined in Appendix C, Related INPUT Reports.

The base year (1985) is consistent with the base year for INPUT's U.S. Information Services Markets, 1984-1989, Industry-Specific Markets (Vol. I).

- Interviews were conducted with Telecheck Services, Telecredit, Fundsnet, National Bancard, Comdata Network, National Data Corp, First Data Resources, Chilton, and Visa International.
- The definitions of terms used in this report appear in Appendix A. A data base summarizing forecasts by delivery mode and industry sector appears in Appendix B.
- The forecasts contained in this report include a 6% factor for inflation.
- Inquiries and comments on the information presented in this report are invited from clients.

II EXECUTIVE SUMMARY

II EXECUTIVE SUMMARY

- This executive summary is designed in a presentation format in order to:
 - Help the busy reader to quickly review key research findings.
 - Provide a ready-to-go executive presentation, complete with script, to facilitate group communication.
 - Key points of the report are summarized in Exhibits II-1 through II-5. On the left-hand page facing each exhibit is a script explaining the contents of the exhibit.
- In order to reduce repetition of the terms "check guarantee services" and "credit card authorization services," the acronyms CGS and CCAS will be frequently used.

A. A HUGE POTENTIAL MARKET

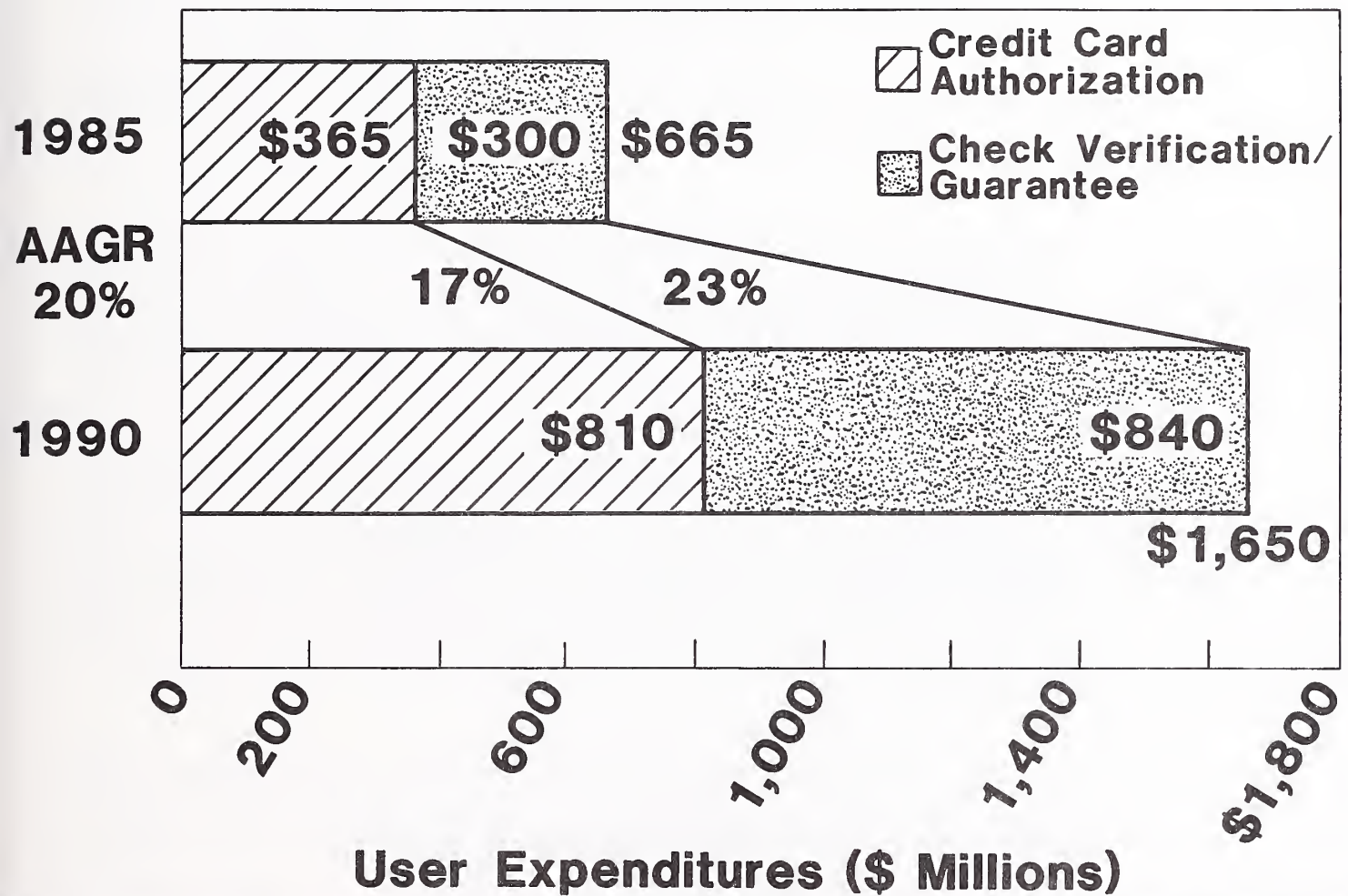
- The potential market for offering credit card authorization/check guarantee information services to retailers, financial institutions, and other companies is statistically awesome.
- Over 240 million consumers, using over 700 million credit cards, currently initiate over 7 billion transactions annually at an average cost of over 20 cents per transaction. This places the current credit card authorization services (CCAS) market potential at \$1.5 billion in revenues.
- Another way to assess the same market is as follows: consumers currently spend some \$300 billion for retail purchases utilizing credit cards. At an average of 3% of the charge amount, total expenditures for all credit card services, including authorization, are \$9 billion. The portion related to credit card authorization is 20%; therefore, the 1985 market potential is \$1.8 billion (the same order of magnitude as above).
- The gap between the current market and the potential market is very large. INPUT believes that less than 25% of all credit card transactions receive voice or electronic authorization.
- The potential market for check guarantee services (CGS) is even more impressive. Consumers currently write over 20 billion retail checks, the aggregate of some \$500 billion in total annual spending. Expenditures for CGS average 3% of the check amount; this places the potential market at \$15 billion.
- The gap between the existing market and the market potential for check guarantee services is even greater than that for CCAS. INPUT believes that penetration is currently less than 3%.

A HUGE POTENTIAL MARKET

- **Credit Card Authorization Service (CCAS):**
 - **7 Billion Annual Transactions**
 - **\$300 Billion in Total Spending**
 - **Market Less than 25% Penetrated**
 - **Check Guarantee Services (CGS):**
 - **Over 20 Billion Transactions**
 - **\$500 Billion in Total Spending**
 - **Market Less than 3% Penetrated**
-

B. MARKET GROWTH ACCELERATING

- Check guarantee and credit card authorization services are expected to grow at a combined average annual growth rate (AAGR) of 20% over the next five years, barring economic recession. However, market forces and economic conditions could combine to raise this compound growth to exceed 30% annually during the last half of the forecast period. Annual 1990 expenditures will reach \$1.65 billion.
- Credit card authorization services (CCAS) currently comprise nearly 55% of the current market. Although credit card transaction volume will increase less than 3% annually, the portion of total transactions processed by authorization services will rise from approximately 25% to in excess of 50%.
- Increases in the proportion of total transactions which are processed electronically (as opposed to voice), heavy competition, and economies of scale resulting in transaction price and volume discounts will limit total expenditure growth to 17% annually.
- Expenditures for check verification/guarantee services (CGS) will capture the major portion (51%) of total expenditures in 1990. CGS will benefit from the rapidly increasing base of credit card authorization terminals, which are designed to handle both credit card and check transactions.
- Competition and economies of scale similar to those for credit card authorization services will limit expenditure growth to 23% annually over the forecast period.

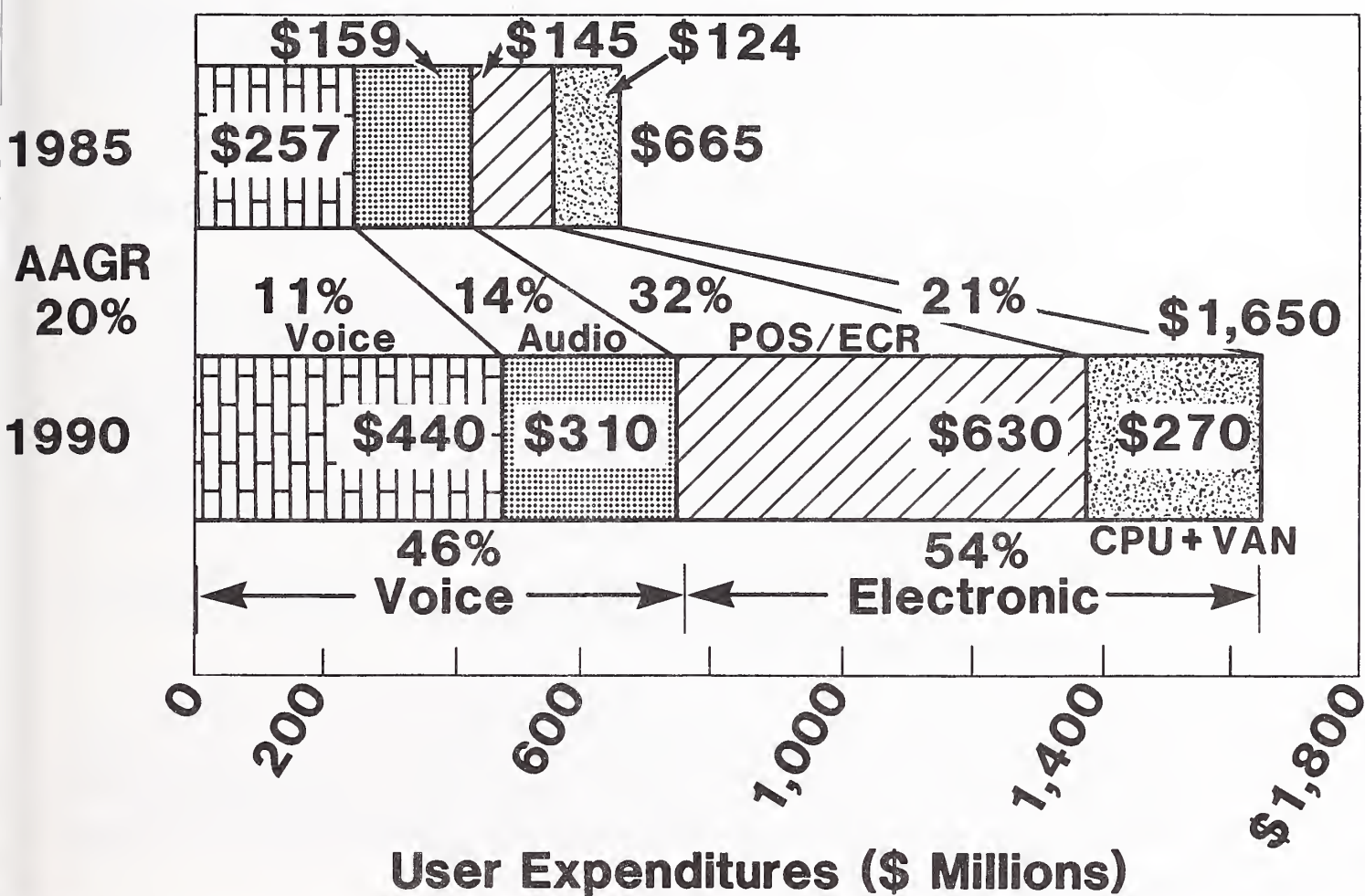
INPUT[®]**MARKET GROWTH ACCELERATING**

C. MARKET SHIFTING TO ELECTRONIC TRANSACTIONS

- Expenditures for voice-related check verification/guarantee information services currently represent the major portion (62%) of the total market.
 - Dial-up voice with operator voice-response comprises 38%.
 - Voice with audio response represents another 24%.
- Three factors will compound to produce a significant shift in service delivery modes over the forecast period:
 - Fraud is growing rapidly, particularly in credit cards, and is threatening the profit margins of card companies (i.e., Visa, American Express, MasterCard). There is therefore every incentive to facilitate CCAS at the retail level.
 - An aggressive program by market participants, financial institutions, third party information services vendors, value added network (VAN) vendors, retailers, and terminal vendors to install credit authorization, POS, and ECR terminals capable of handling both credit card and check transactions.
 - The expansion, integration, and interfacing of credit card data, check guarantee data, and interchange networks handling a wide variety of terminals, protocol, and message formats for both credit card and check authorization/guarantee transactions.
- Expenditures for electronic delivery will become the dominant (54%) component of all authorization/guarantee expenditures in 1990; with the most significant increase coming from POS/ECR originated electronic transactions that will rise from 22% of the current market to become its largest component, approaching 40% of the total market by 1990.

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MARKET SHIFTING TO ELECTRONIC TRANSACTIONS



D. VAN NETWORKS: KEY TO SERVICE OFFERINGS

- Nationwide, value-added networks (VANs) are the key to the successful marketing of any financial transactions service including CCAS and CGS.
 - Sears and J. C. Penney are entering the marketplace by piggybacking CCAS/CGS on existing networks.
 - TYMNET has made arrangements with MasterCard for VAN services for MasterCard electronic transactions.
 - AT&T-Information Services has enormous potential for becoming a significant market participant.
- To reach into the retail marketplace, networks have many entry nodes.
 - Data entry nodes must be capable of handling a variety of terminals, protocols, and message formats.
 - Programmable communications intelligence in newer terminals has proved very effective.
- CCAS and CGS data networks must interface with each other and with interchange networks to effectively route transactions. Little standardization exists; message-protocol conversion is a must at each interface which creates unnecessary overhead.
- Nevertheless there is a growth trend toward network integration. Visa and MasterCard are contemplating integrating their national interchange networks (were this to happen they would reap enormous cost savings benefits).

VAN NETWORKS: KEY TO SERVICES OFFERINGS

- **Multiple Entry Points Critical**
 - **Terminals**
 - **Protocols**
 - **Message Formats**
 - **Message/Protocol Convention at the Interface**
 - **Trend Toward Network Integration**
 - **Transaction Interchange**
 - **Credit/Debit Card**
 - **Voice/Data**
-

E. POTENTIAL FOR ADDITIONAL SERVICES

- The market for CCAS/CGS is made even more attractive by the high potential for offering additional services, both to the existing client base and in other market areas.
- The technology for offering CCAS/CGS is directly applicable to the delivery of additional services that address needs within the existing client base and in new market areas:
 - Increased intelligence in ECR and POS authorization terminals permits offering services for data capture, transaction balancing, funds clearance, and settlement.
 - Intelligent terminals can be downloaded to handle real-time order entry and inventory control services; this same data can be sold to the 100,000+ suppliers of goods sold by retail chains, allowing competitive analysis, measurement of the effect of advertising, and sales forecasting.
 - Interconnecting intelligent terminals through vendor authorization networks will allow financial institutions to offer cash management services directly to the retail outlets.
 - Vendors can use voice authorization networks to offer telemarketing and teleordering services for national retailers and mail order houses.
- This same authorization technology is directly applicable to a wide array of reservation services, e.g., airlines, auto rental, motels, and hotels.

POTENTIAL FOR ADDITIONAL SERVICES

- **To Existing Clients**
 - **Data Capture and Balancing**
 - **Clearance and Settlement**
 - **Order Entry and Inventory Control**
 - **Using Authorization and Network Technology**
 - **Cash Management**
 - **Telemarketing**
 - **Reservation Services**
 - **Management of Advertising Effectiveness**
-

III MARKET ANALYSIS

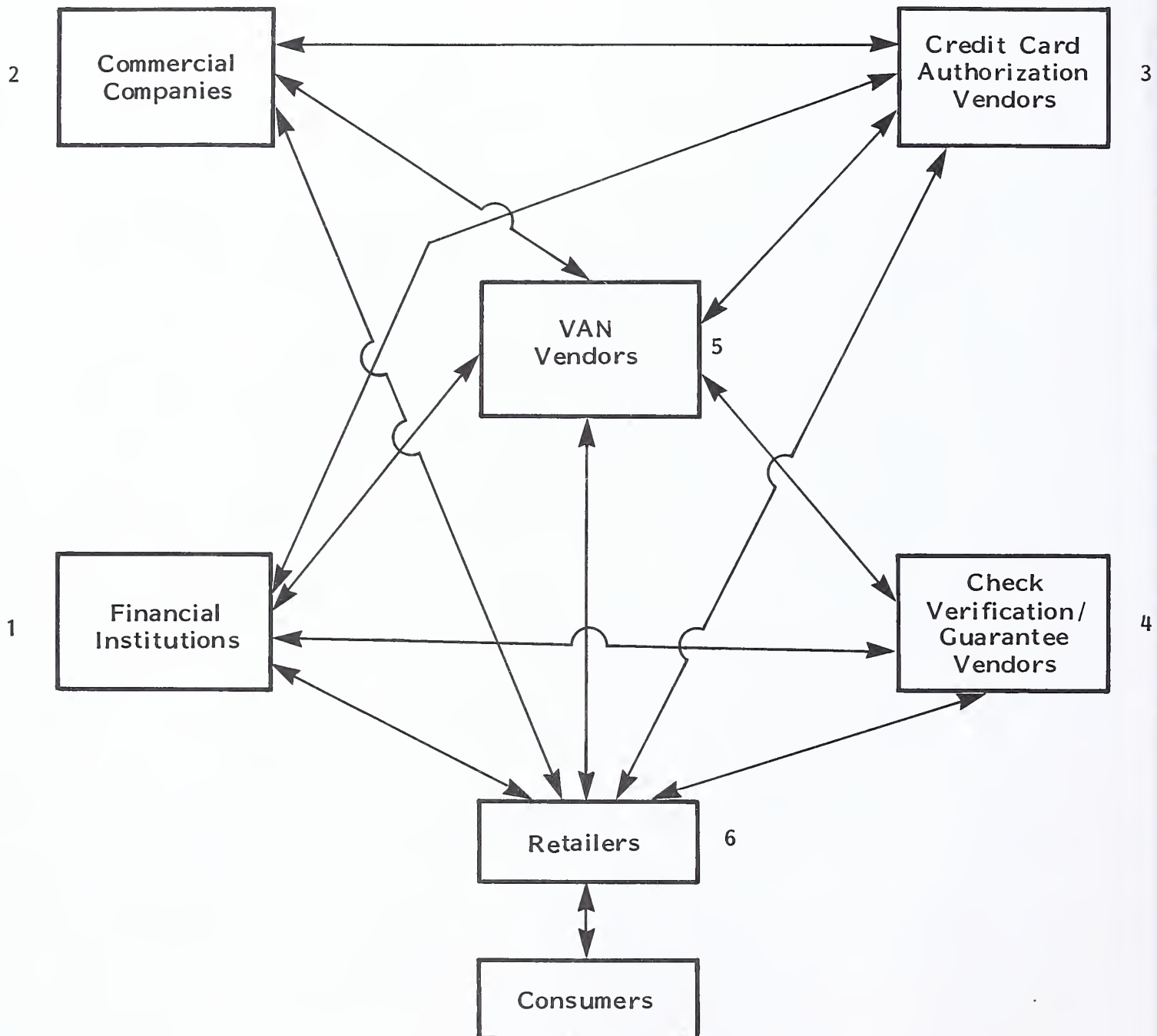
III MARKET ANALYSIS

A. MARKET STRUCTURE

- The market for credit card authorization/check guarantee services focuses on consumers. In the aggregate, the size of the potential marketplace is defined by 1984 industry based data statistics:
 - Credit cards: seven billion transactions with a total volume approaching \$300 billion.
 - Retail checks: over 20 billion checks with total check volume exceeding \$470 billion.
- With respect to market penetration, 1984 industry data indicates that:
 - Less than 25% of all credit card transactions currently receive credit authorization.
 - Less than 3% of retail check dollar volume is validated/guaranteed.
- The six vendor groups that make up the structure of the credit card authorization and check guarantee services marketplace are shown in Exhibit III-1. These groups interact through elaborate and complex voice and data networks to provide CCAS/CGS through an increasingly electronic retailer interface to consumers.

EXHIBIT III-1

PARTICIPANTS IN THE CREDIT CARD
AUTHORIZATION/CHECK GUARANTEE MARKETPLACE



I. FINANCIAL INSTITUTIONS

- Financial institutions include commercial banks, S&Ls, credit unions, finance companies, and brokerage houses.
- Financial institutions are the major interface with retailers for establishing credit card programs including authorization, transaction processing, and check clearance. Financial institutions are also a major marketer of check verification/guarantee services.
- Less than 200 of the 20,000 plus financial institutions offer credit authorization services directly to retailers.
- Approximately 5,000 financial institutions offer credit card programs through financial institutions (primarily large commercial banks) and through credit card vendors, including credit card associations and commercial processing vendors.
- Credit card authorization services accomplished by financial institutions for their subscribing retailers are considered "in-house." Such EDP expenditures have not been included as expenditures for information services in this study.

2. COMMERCIAL COMPANIES

- Commercial companies include retailers, oil companies, airlines, travel and entertainment agencies, hotels, and telephone companies. Less than 1,000 commercial companies offer credit card programs to retailers. Commercial companies frequently use commercial vendors to accomplish authorization services.
- Oil companies are beginning to use retail companies (e.g., Sears, J. C. Penney) networks to deliver credit and authorization services.

- Telephone companies are increasingly promoting the use of credit cards to make long distance calls. Authorization is accomplished through commercial credit card vendors.
- Commercial companies conduct a major portion of credit card authorization and processing services directly with their own retailers. Such services are considered "in-house" and are not included in the information services expenditure forecast in this study.

3. CREDIT CARD AUTHORIZATION VENDORS

- Less than 20 credit card associations and commercial vendors operate as third-party processors in the current marketplace. Credit card authorization vendors accomplish credit authorization on behalf of financial institutions and commercial vendors.
- Vendors interface with retailers directly, and (indirectly) through value-added network (VAN) vendors and financial institutions.
- Credit card authorization vendors at times utilize the networks of check verification/guarantee vendors to deliver credit card authorization services.

4. CHECK VERIFICATION/GUARANTEE VENDORS

- There are two national (and less than 20 regional and local) check verification/guarantee vendors. These vendors offer check verification/guarantee services either directly to retailers or through financial institutions.
- Check verification/guarantee vendors also use VAN vendors and credit card authorization vendor networks to deliver authorization/guarantee services.

5. VALUE-ADDED NETWORK (VAN) VENDORS

- The Visa and MasterCard authorization networks are a major source of VAN services revenues from credit authorization interchange. TYMNET is involved with VAN services for the MasterCard Automated Point-of-Sale Program (MAPP).
- VAN services utilized by all marketplace participants, whether "in-house" or through computer services, are considered as information services in the expenditure forecast presented in this report.
- Industry data indicates that approximately two-thirds of bank credit card authorization transactions are currently interchanged between market participants.

6. RETAILERS

- Retailers include supermarkets, department stores, small merchants, restaurants, gas stations, and other retail establishments. There are over one-quarter million retail establishments.
- Major retailers offer their own credit card and credit authorization services. Such services are considered "in-house." Expenditures for such services are not considered part of the credit card authorization expenditures for information services forecast in this report
- Large retailers such as Sears and J. C. Penney are beginning to offer credit card services, including authorization and clearance to commercial companies (and, indeed, other retailers).

B. CURRENT EXPENDITURES IN 1985

I. COMPUTER SERVICES EXPENDITURES

- Users (primarily retailers) will spend well over \$650 million in 1985 to utilize consumer credit card authorization and check verification/guarantee information services, as shown in Exhibit III-2. These expenditures are considered a normal cost of doing business and a consumer convenience to secure revenues and hopefully, profitability (by eliminating bad debt).
- Retailers spend a great deal more on credit card operations, including transaction processing and clearance, than is spent on check verification/guarantee. However, expenditures for credit card authorization are about equal to expenditures for check verification/guarantee.
 - Credit card authorization transaction volume of 1.5 billion in 1985 vastly exceeds check verification/guarantee volume of over 150 million.
 - Expenditures for underwriting credit card losses are bundled with transaction processing and clearance and settlement expenditures, and are distributed among participating financial institutions.
 - User expenditures for check guarantee include direct underwriting fees by the services vendor based on, among other parameters, the check amount.
- The volume of credit card transactions is growing less than 5% annually. Fraud is exploding, however. The growth of credit card authorization volume (at least 14% annually) results from a proliferation of electronic authorizations from POS and ECR terminals in the retail environment. Increasing the number of terminals in turn increases the portion of total credit card transactions which are authorized.

EXHIBIT III-2

USER EXPENDITURES FOR CCAS/CGS BY DELIVERY MODE, 1985

DELIVERY MODE	USER EXPENDITURE	
	1985 (\$ Millions)	GROWTH 1984-1985 (Percent)
Remote Computing		
● Credit Card Authorization	\$296	14%
● Check Verification/Guarantee	300	20
Total Processing Services	\$596	17%
VAN	69	14
Industry Specific Total	\$665	17%

- Value added network (VAN) services, currently 10% of total user expenditures, are provided by the Visa and MasterCard Interchange Networks and more recently by TYMNET for the MasterCard Automated Point-of-Sale Program (MAPP).

2. CREDIT CARD AUTHORIZATION EXPENDITURES

- Users are currently spending over \$365 million to process over 2.5 billion authorizations at a cost of approximately 14 cents per transaction.
- Approximately 1.5 billion authorizations are primary transactions delivered by information services vendors through the first five modes of service, as shown in Exhibit III-3. Over 1.1 billion secondary transactions are processed through VAN interchange.
- Of approximately 1.9 billion primary transactions originated by information service vendors and "in-house" by financial institutions and commercial companies, approximately 60% are processed by VAN interchange networks.
- Voice authorization services, costing about 55 cents/authorization, are still the leading (42%) type of processing service and are still growing. Voice authorization is in part being replaced by electronic methods, particularly POS and ECR.
- Nearly half of user expenditures for credit card authorization services are, as shown in Exhibit III-4, utilized by the banking and finance industry sector. Credit authorization vendors offer services to financial institutions as a primary distribution channel.
- Some vendors also offer credit authorization services as well as support directly to the retail/distribution industry sector, though to a lesser extent, authorization services in the transportation and services industry sectors.

EXHIBIT III-3

**USER EXPENDITURES FOR
CREDIT CARD AUTHORIZATION SERVICE BY MODE IN 1985**

SERVICE MODE	TRANSACTIONS (Millions)	USER EXPENDITURES (\$ Millions)	GROWTH 1984-1985 (Percent)
Voice	220	\$123	10%
Audio Response	250	76	12
Point of Sale	190	38	22
Electronic Cash Register	235	24	25
Computer to Computer	575	35	15
Processing Services Sub Total	1,470	\$296	14%
VAN	1,150	69	15%
Total	2,620	\$365	14%

EXHIBIT III-4

USER EXPENDITURES FOR CREDIT CARD AUTHORIZATION SERVICES BY INDUSTRY SECTOR IN 1985

INDUSTRY SECTOR	USER EXPENDITURES (\$ Millions)	MARKET SHARE (Percent)
Banking and Finance	\$176	48%
Retail/Distribution	109	30
Transportation	33	9
Services	22	6
Other	25	7
Total	\$365	100%

- Vendors also provide credit authorization services to other industry sectors such as medical and utilities.

3. CHECK VERIFICATION/GUARANTEE EXPENDITURES

- Guaranteeing retail checks is by far the major service offering in this sector. As shown in Exhibit III-5, check verification represents about 8% of the total market. Retailers find identification of bad checks helpful to reduce bad debt but with verification, the burden of check acceptance remains with the retailer.
- Check verification services usually provided on a local or regional basis by small services vendors are primarily transaction priced and average 30 cents per transaction. Check verification services are primarily delivered through voice and audio response services modes. A few are delivered through polled terminals at large retail outlets.
- Expenditures for check guarantee services include the underwriting fee, protecting the retailer from all forms of check loss. Nearly \$13 billion, or less than 3%, of total retail check amounts are currently guaranteed for an average expenditure of 2.3% of the check amount.
- Voice, as shown in Exhibit III-6, is still the major method (45%) of total expenditures for delivery check verification/guarantee services to retailers.
- The proliferation of the variety of POS and ECR terminals installed at retailer sites, the major portion of which can be connected to both card authorization and check guarantee networks, is growing at a rate approaching 30% annually in the 1985 check guarantee marketplace.
- Although CCAS and CGS at times reach retailers through each other's networks, the volume of interchange for check guarantee services is not

EXHIBIT III-5

USER EXPENDITURES FOR CHECK VERIFICATION/GUARANTEE SERVICES
BY TYPE IN 1985

TYPE	TOTAL TRANSACTIONS (Millions)	TOTAL VALUE (\$ Billions)	EXPENDITURES (\$ Millions)	GROWTH 1984-1985 (Percent)
Verification	102	\$18.8	\$ 25	10%
Guarantee	58	12.7	275	21
Total	160	\$31.5	\$300	20%

EXHIBIT III-6

**USER EXPENDITURES FOR CHECK VERIFICATION/GUARANTEE SERVICES
BY MODE IN 1985**

SERVICE MODE	TRANSACTIONS (Millions)	TOTAL TRANSACTION VALUE (\$ Millions)	CGS EXPENDITURES (\$ Millions)	MARKET SHARE (Percent)
Voice	42	\$ 6,100	\$134	16%
Audio- Response	26	4,500	83	18
Point of Sale	75	3,900	70	27
Electronic Cash Register	17	1,000	13	30
Total	160	\$15,500	\$300	20%

sufficiently large for separation into computer-to-computer and VAN service modes.

- Check verification/guarantee information services are targeted primarily to retailers and other service providers to consumers.
 - User expenditures in the retail sector, as shown in Exhibit III-7, represent some 34% of total.
 - Check guarantee services have been particularly effective in the gambling subsector of the services industry.
 - Specialized services are offered to independent truckers in the transportation sector.

C. FORECAST 1985-1990

I. INFORMATION SERVICES FORECAST

- Currently spending over \$650 million, users (retailers) will spend more than \$1.6 billion for CCAS/CGS by 1990 (see Exhibit III-8). Expenditures for credit card authorization services will drop from half to approach 40% of total processing services. Credit card transaction volume will increase less than 3% annually.
- The portion of total transactions authorized will rise from approximately 25% to in excess of 50% for an annual growth rate of 23%. Telephone and audio response delivery will give ground to totally electronic authorizations which, together with economies of scale, will limit total expenditure growth to 17% annually.

EXHIBIT III-7

USER EXPENDITURES FOR CHECK VERIFICATION/GUARANTEE SERVICES
BY INDUSTRY SECTOR IN 1985

INDUSTRY SECTOR	USER EXPENDITURES (\$ Millions)	PORTION (Percent)
Retail/Distribution	\$102	34%
Services	75	25
Banking and Finance	63	21
Transportation	48	16
Other	12	4
Total	\$300	100%

EXHIBIT III-8

FORECAST OF USER EXPENDITURES FOR CCAS/CGS BY DELIVERY MODE, 1985-1990

DELIVERY MODE	USER EXPENDITURES (\$ Millions)			
	1985 (\$ Millions)	1984-1985 AAGR (Percent)	1990 (\$ Millions)	1985-1990 AAGR (Percent)
Remote Computing				
● Credit Card Authorization	\$296	14%	\$ 635	16%
● Check Verification/ Guarantee	300	20	840	23
Total Processing Services	\$596	17%	\$1,475	20%
VAN	69	15	175	20
Industry Specific Total	\$665	17%	\$1,650	20%

- Expenditures for check verification/guarantee will nearly triple over the forecast period, becoming the major (57%) delivery mode. Check verification/guarantee will, in all likelihood, remain less than 10% of total retail check dollar volume.
- Check verification/guarantee services will benefit from the rapidly increasing base of credit card authorization terminals which can also handle check transactions. Price competition and attendant economies of scale will limit expenditure growth to 23% annually over the forecast period.
- VAN vendors will process a combination of over four billion direct authorization and indirect interchange transactions. Unless telecommunication costs (AT&T) sharply rise, economies of scale will limit expenditure growth to 20% annually over the forecast period.

2. CREDIT CARD AUTHORIZATION SERVICES FORECAST

- User (retailer) expenditures for credit card authorization services will, as shown in Exhibit III-9, more than double over the forecast period, exceeding \$800 million annually by 1990. Totally electronic delivery (POS, ECR, and computer-to-computer) will, by 1990, become the dominant method of delivering processing services.
- Approximately 80% of over four billion authorization transactions will be processed by totally electronic means. User expenditures for credit card authorization services will experience the greatest growth in point-of-sale (POS) and electronic cash register (ECR), rising from 20-30% of total processing services expenditures over the five-year forecast period.
- Growth will result from a concerted effort by market participants to more than double the authorized portion of total credit card transactions to greatly reduce fraud and other losses.

EXHIBIT III-9

FORECAST OF USER EXPENDITURES FOR CCAS BY SERVICE TYPE, 1985-1990

SERVICE TYPE	USER EXPENDITURES (\$ Millions)			
	1985 (\$ Millions)	1984-1985 AAGR (Percent)	1990 (\$ Millions)	1985-1990 AAGR (Percent)
Voice	\$123	10%	\$180	8%
Audio-Response	76	12	135	10
Point of Sale	38	22	130	28
Electronic Cash Register	24	25	95	32
Computer to Computer	35	15	95	22
Processing Services Subtotal	\$296	14%	\$635	16%
VAN	\$ 69	15%	\$175	20%
Total	\$365	13%	\$810	17%

- Over 20% of annual user expenditures will, by 1990, be utilized for VAN services handling over four billion electronic interchange transactions.

3. CHECK VERIFICATION/GUARANTEE SERVICES FORECAST

- User (retailer) expenditures for check verification/guarantee services, will nearly triple, approaching \$850 million annually over the forecast period (see Exhibit III-10).
- The market will greatly benefit from installation of point-of-sale (POS) and electronic cash register (ECR) terminals that can handle check guarantee as well as credit authorization services. This portion of the market will grow from just over 25% in 1985 to approach 50% by 1990.
- Total check dollar volume, verified and/or guaranteed, will exceed \$55 billion, still well under 10% of the total retail check volume forecast for 1990, a growth rate approaching 30% annually. Price competition and economies of scale will hold the growth of total user expenditure for verification/guarantee services to 23% annually.

D. INFORMATION SERVICES DELIVERY

I. CREDIT CARD AUTHORIZATION SERVICES (CCAS)

a. Retail Establishments

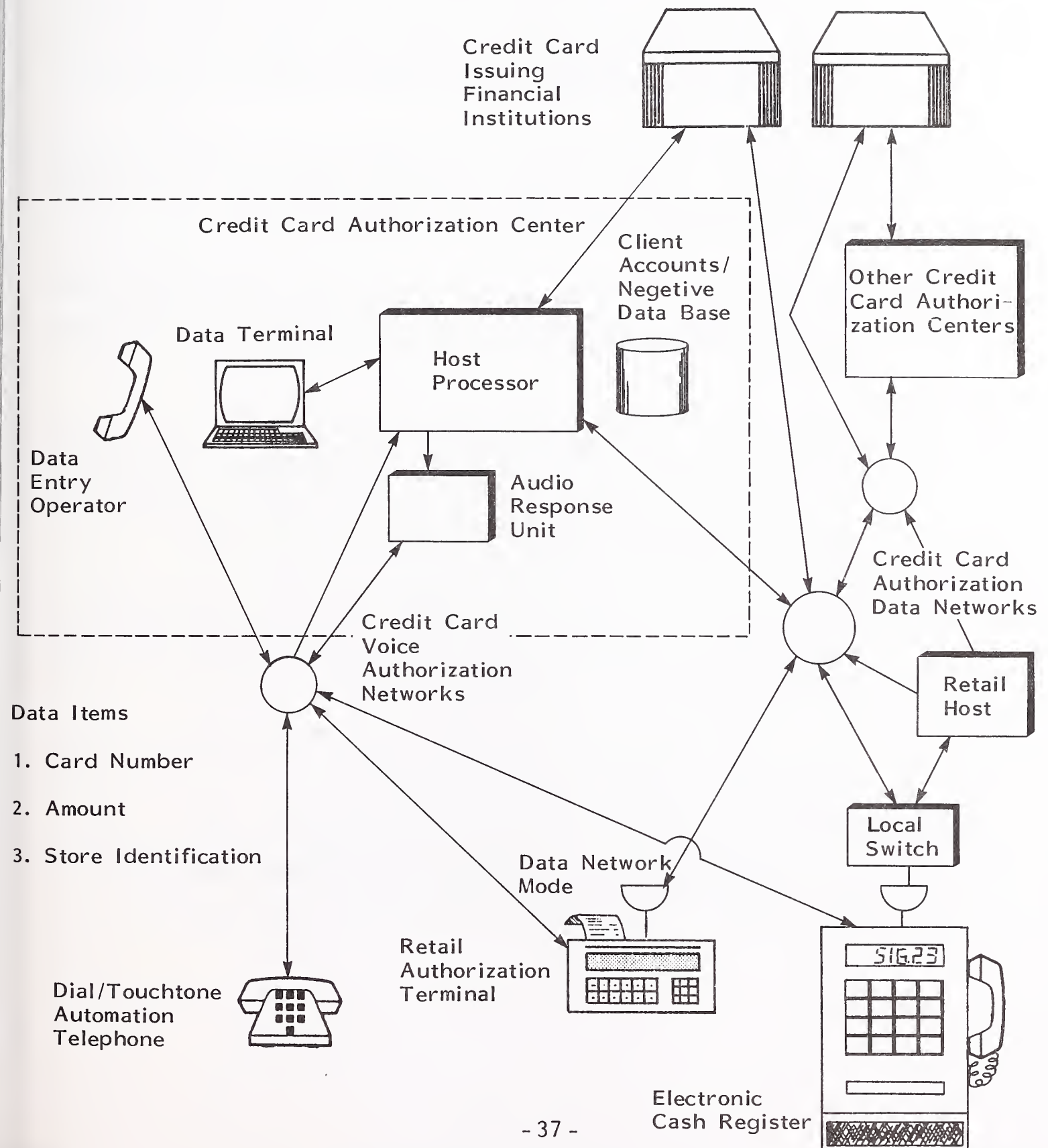
- Credit card authorization systems for retail establishments are illustrated in Exhibit III-11.
- The most basic form of credit card authorization service is voice services. The retail establishment dials a local number or more usually into WATS.

EXHIBIT III-10

FORECAST OF USER EXPENDITURES FOR CGS
BY SERVICE TYPE, 1985-1990

SERVICES TYPE	USER EXPENDITURES (\$ Millions)			
	1985 (\$ Millions)	1984-1985 AAGR (Percent)	1990 (\$ Millions)	1985-1990 AAGR (Percent)
Voice	\$134	16%	\$260	14%
Audio Response	83	18	175	16
Point of Sale	70	27	320	36
Electronic Cash Register	13	30	85	45
Total	\$300	20%	\$840	23%

CREDIT CARD AUTHORIZATION SYSTEMS FOR RETAIL ESTABLISHMENTS



Alternate numbers are usually provided to reduce, but far from eliminate, busy signals.

- The retailer is connected to the data entry operator at a credit card authorization center at a financial institution, a bank card association, or most frequently a commercial vendor. The data entry operator enters the authorization request into the local host processor. The authorization process first checks against a negative data base (lost, stolen, hot, closed, etc.) accounts.
- The process next checks to see if the account is held locally. If not held locally, the transaction is transmitted through credit card data interchange networks to the appropriate authorization center.
- Financial institutions establish individual criteria (i.e., maximum transaction amount, number of transactions per account per day, etc.) for credit card authorization center approval.
- Authorization transactions not meeting pre-established criteria are routed to the client financial institution of credit card authorization transactions and are transmitted to the retailer either via the data terminal-data entry operator or increasingly more frequently by audio response units.
- Once connection is made, voice initiated credit card authorizations are accomplished in from 10-40 seconds. Use of audio response units reduce average transaction time by approximately 25%.
- A wide variety of retail authorization terminals are used to access multiple credit card voice and data authorization networks.
 - The terminals contain modems and automatic dialing capability to speed up the connection process.

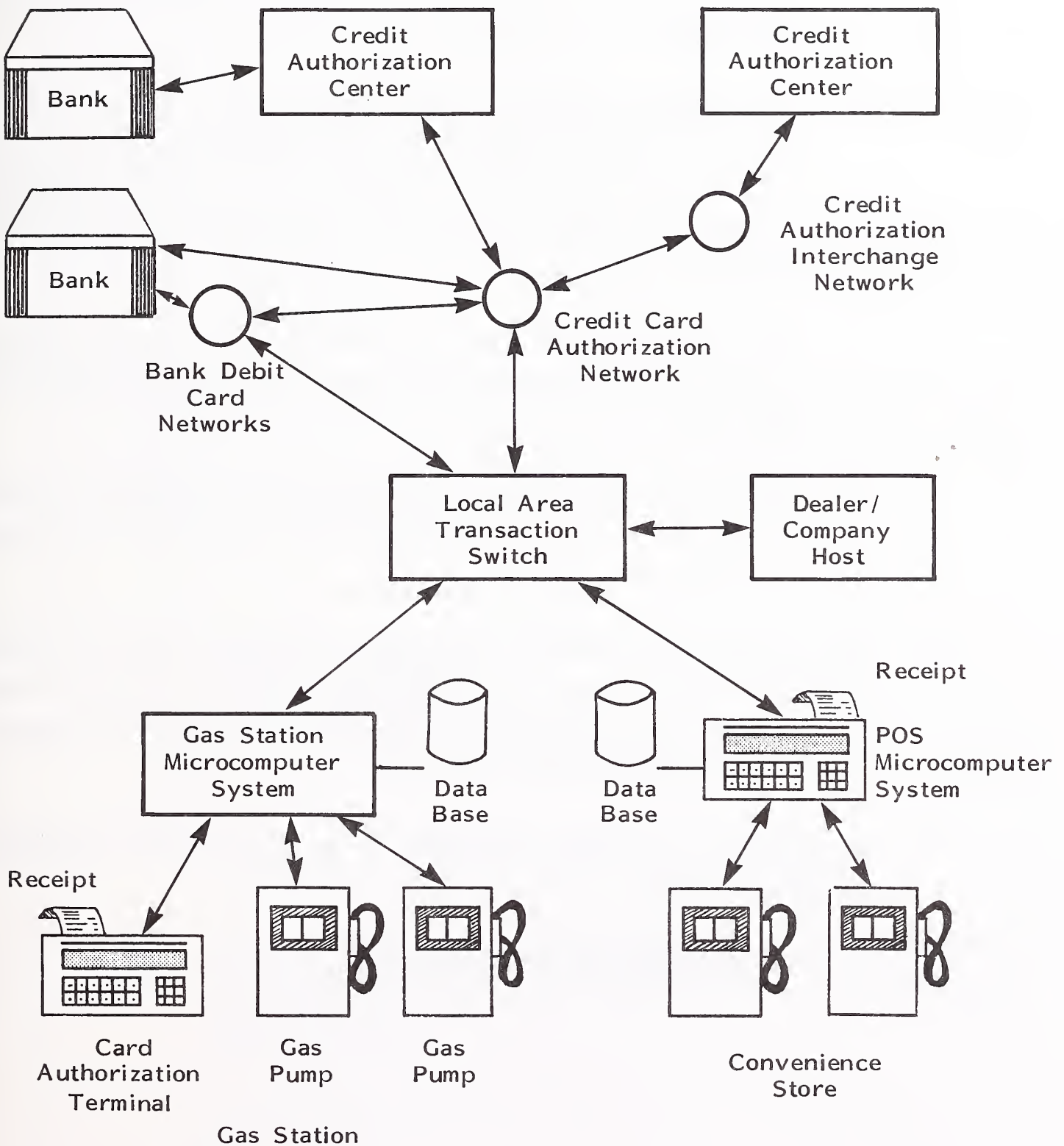
- Most contain a credit card strip reader to read magnetically enclosed card information.
 - Many have a built-in telephone or have the capability of being connected to a telephone, thereby gaining access to a voice line.
 - Newer models contain microprocessors and sufficient data storage for handling data capture and polled data transmission and settlement.
 - The terminals contain various levels of intelligence to create the multiple protocol and message formats to properly transmit and receive information over multiple vendor data/interchange networks.
 - Access to voice authorization networks is provided for over "floor limit" and other exception authorization transactions.
 - Data entry and function keys and minimum visual display are provided to create electronic data transmission and receive automated authorization.
- Retail authorization terminals can be connected to multiple credit card authorization data networks. The network entered is that of the primary service provider (financial institution, credit card association, commercial processing vendor, and more recently VAN vendor(s)). Accounts not held by the primary vendor are routed through credit card interchange networks to other card authorization centers or to financial institutions.
 - Large, and increasingly, medium size retailers are installing electronic cash registers with comprehensive voice and electronic interfaces to credit card authorization networks. Newer units have full voice and data communications capabilities integrated with ECR resulting in a comprehensive POS system.

- ECRs enter credit card authorization networks via a local (in store/area) switch. The authorization can be routed either directly to credit card authorization networks or via the retail host network (national/regional retailers) to credit card authorization data networks or credit card interchange networks.

b. Retail Gasoline Service Stations

- Credit/debit card authorization systems for retail gasoline service stations are illustrated in Exhibit III-12.
- Retail gas stations and closely allied convenience stores are a rapidly emerging market for offering credit card authorization services. Although bank debit card transaction experiments are underway, primary action is with oil and bank credit card transactions.
- Completely automated card transaction systems for gas stations include:
 - Card authorization terminals.
 - Electronically metered gas pumps.
 - A station microcomputer system with a data base.
 - A local area switch.
- Credit card authorization proceeds as follows:
 - The consumer activates a selected gas pump.
 - The consumer enters credit card information through the card strip reader at the authorization terminal.

CREDIT/DEBIT CARD AUTHORIZATION SYSTEMS
FOR RETAIL GASOLINE SERVICE STATIONS



- The consumer enters the pump number, the maximum sales amount, debit or credit card, and (if a debit card) the secret personal identification number (PIN).
 - The gas station microcomputer system checks its data base for negative file ("hot card") and for independent oil dealer's authorization information.
 - Authorization messages are sent to a local area transaction switch which can route the transaction to the independent dealer/company host in the case of credit authorization to a credit authorization network and in the case of a debit transaction to a bank debit card network.
 - On the average, transactions are authorized in five seconds. They are returned to the gas station microcomputer system which activates the gas pump.
 - When the consumer turns off the gas pump, the microcomputer system completes the transaction and prints receipts at the card authorization terminal.
- The gas station microcomputer system sends charge/debit data from the last transaction with the current authorization transaction to the local area transaction switch and on to the dealer/company host for purposes of data capture, balancing, clearance, inventory control, etc.
 - An alternate to complete automation is the single operator maintained convenience store.
- Gas pumps are electronically controlled.

- An in-store POS microcomputer system with a data base that is operator controlled. The ploy is to induce the consumer into the store for impulse buying of store merchandise.
- The semi-automated operation is as follows:
 - The consumer enters the store with his credit/debit card.
 - The consumer selects the gas pump and proceeds to activate it while the operator obtains authorization for the transaction.
 - Upon completion of the purchase, the consumer returns to the store to purchase additional items as necessary and to obtain the receipt for the transaction.
- Advanced convenience store (POS) systems accomplish inventory control, cash management, transaction balancing, order entry, and other functions. These systems offer a myriad of opportunities for additional information and network services offering.

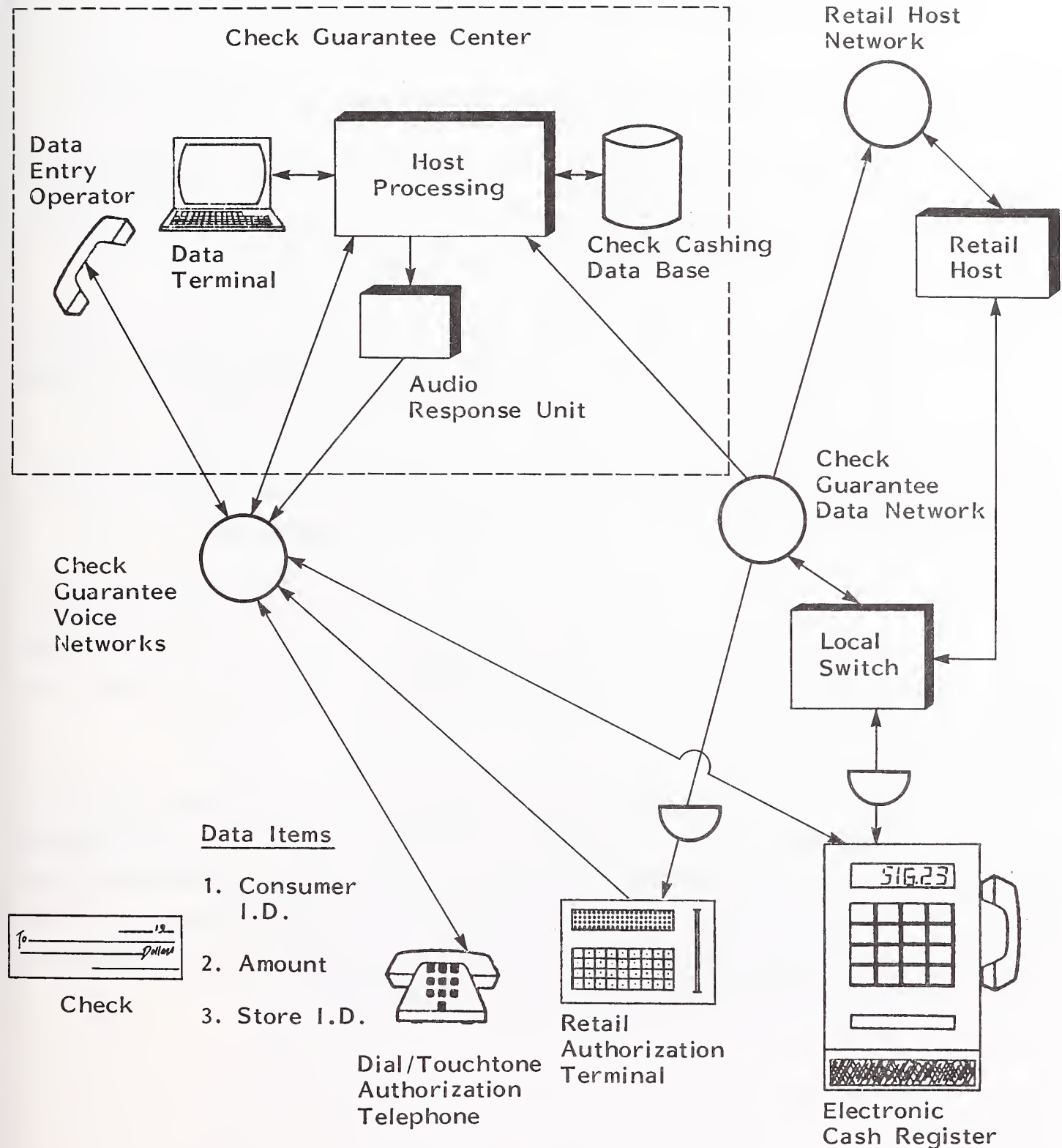
2. CHECK VERIFICATION/GUARANTEE SERVICES

a. Retail Establishments

- A major problem with check verification/guarantee services is consumer identification.
 - Some services use plastic cards (i.e., Honest-Face, CASHEX).
 - Many use drivers' licenses. Drivers' licenses are not always effective in large metropolitan areas where significant portions of the population do not drive cars.

- Major credit cards (i.e., Visa, MasterCard, American Express).
- Three data items are required for check verification/guarantee.
 - Consumer identification--16 bytes.
 - Amount--8 bytes.
 - Store identification--12 bytes.
- Check verification services evaluates the transaction and advise the retailer, utilizing a qualitative scale, on accepting the check. The final decision is the retailer's who bears check losses. Check guarantee services underwrite the transaction, purchasing, without recourse, uncollectable checks.
- Check guarantee transaction systems for retail establishments are illustrated in Exhibit III-13. Check guarantee data networks are separate from, but at times interconnected with, card authorization data networks. INPUT believes that over time the two types of networks will become more closely integrated.
- Virtually all check guarantee services utilize the telephone network to some extent.
 - Telephone for basic service at small establishments.
 - Voice for "over floor" limits (i.e., \$1,500), and exception items for electronic transactions initiated through retail authorization terminals and electronic cash registers.
 - The data entry operator at the check guarantee center enters the transaction into the host processor.

CHECK GUARANTEE TRANSACTION SYSTEMS
FOR RETAIL ESTABLISHMENTS



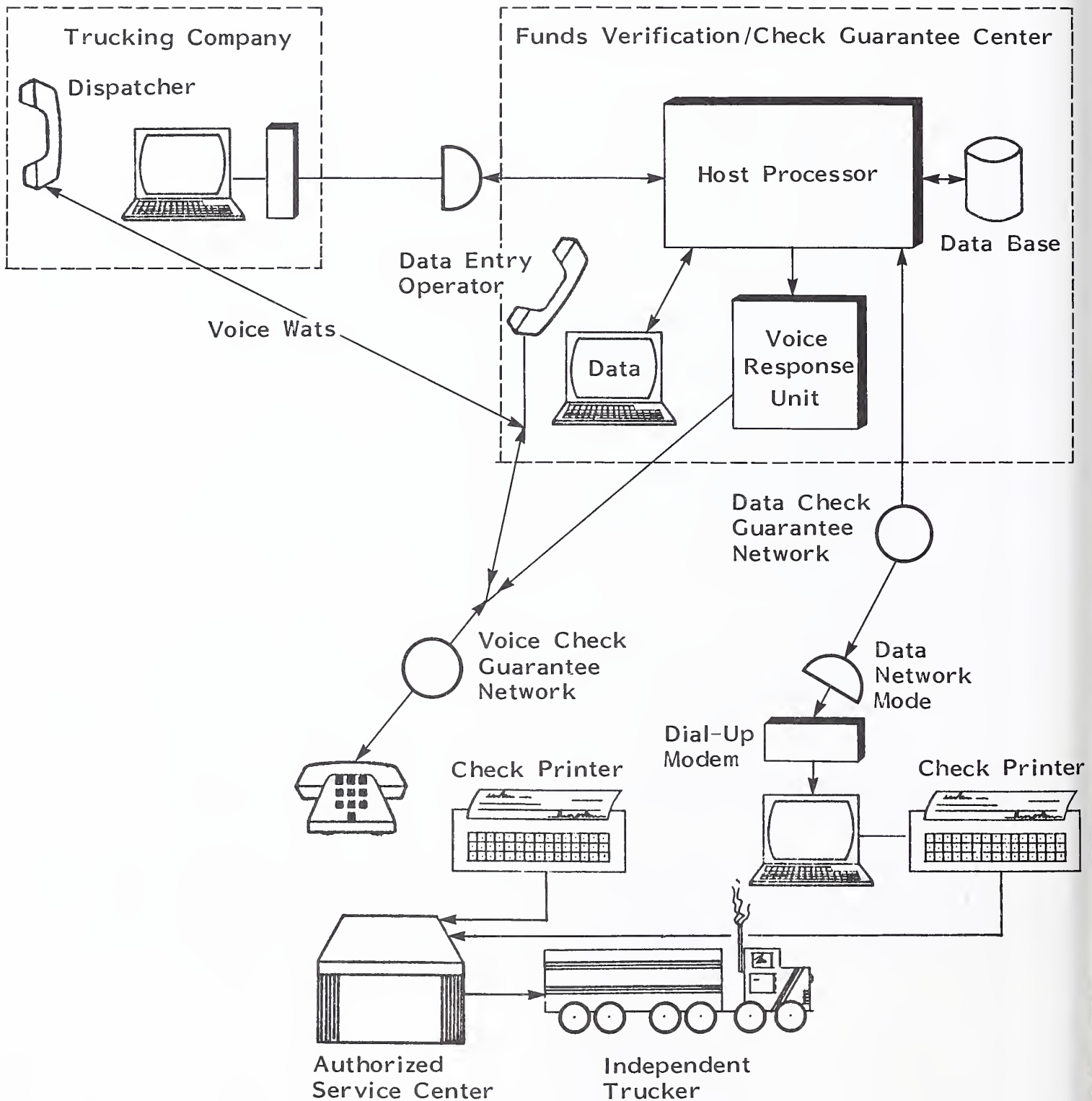
- The host processor maintains a check cashing data base. The contents of the data vary by vendor.
 - Most data bases are maintained by drivers' licenses. Other indexes used are major credit cards and social security numbers.
 - Some vendors maintain only check cashing patterns.
 - Some vendors maintain check cashing history by establishment type.
- Data input to the data base results primarily from retailer supplied information. Some vendors utilize information supplied by a department of motor vehicles, financial institutions, and law enforcement agencies.
- The check guarantee underwriting decision is based upon a number of criteria including the check amount, the type of retailer (massage parlors pay a much higher premium than do shoe stores), and check cashing patterns.
- The guarantee approval/disapproval is communicated to the retailer via the data entry operator or, more frequently, by audio response units.
- Check guarantee vendors provide services both directly to retailers on their own networks and to financial institutions which place terminals with retailers. Check guarantee voice networks are a combination of local area dial-up and WATS.
- There is a wide variety of retail authorization terminals which permit electronic check guarantee transactions. The more recent models are designed for both check guarantee and credit card authorization transactions. Their characteristics are outlined in Section F, Trends. A major feature of retail authorization terminals is automated dialing of and message formatting for alternate check guarantee voice and data networks.

- Local and national retailers are installing electronic cash registers (ECR) containing integrated check guarantee/credit card authorization data and voice capabilities. Check guarantee transactions are routed by a store (area) local switch to check guarantee data networks or, in the case of national retailers, via retail host networks to check guarantee vendor data networks.

b. Truck Service Centers

- A highly successful funds verification/check guarantee service is offered in the transportation sector. In this instance, the independent trucker is the consumer and the authorized truck service center is the retailer.
- The funds verification/check guarantee system for truck service centers is illustrated in Exhibit III-14. There are approximately 8,000 trucking companies which for the most part consign shipments to over 200,000 independent truckers in the United States.
- The basic transaction starts when the trucker purchases food, diesel, and services from a truck stop. The truck stop manager operates as an independent agent of the check guarantee services offerer, receiving a portion of the transaction fee. The authorized service center calls the check guarantee center.
- The data entry operator contacts the trucking company dispatcher for verification for that driver at that point in his route. The data entry operator enters the verification into the host processor which verifies the trucking company's credit against a data base of drivers and trucking companies.
- The guarantee is forwarded by the data entry operator and increasingly, more frequently, by a voice response unit to the authorized service center which creates a check draft payable to the driver, endorsed to the service center.

FUNDS VERIFICATION/CHECK GUARANTEE SYSTEM
FOR TRUCK SERVICE CENTERS

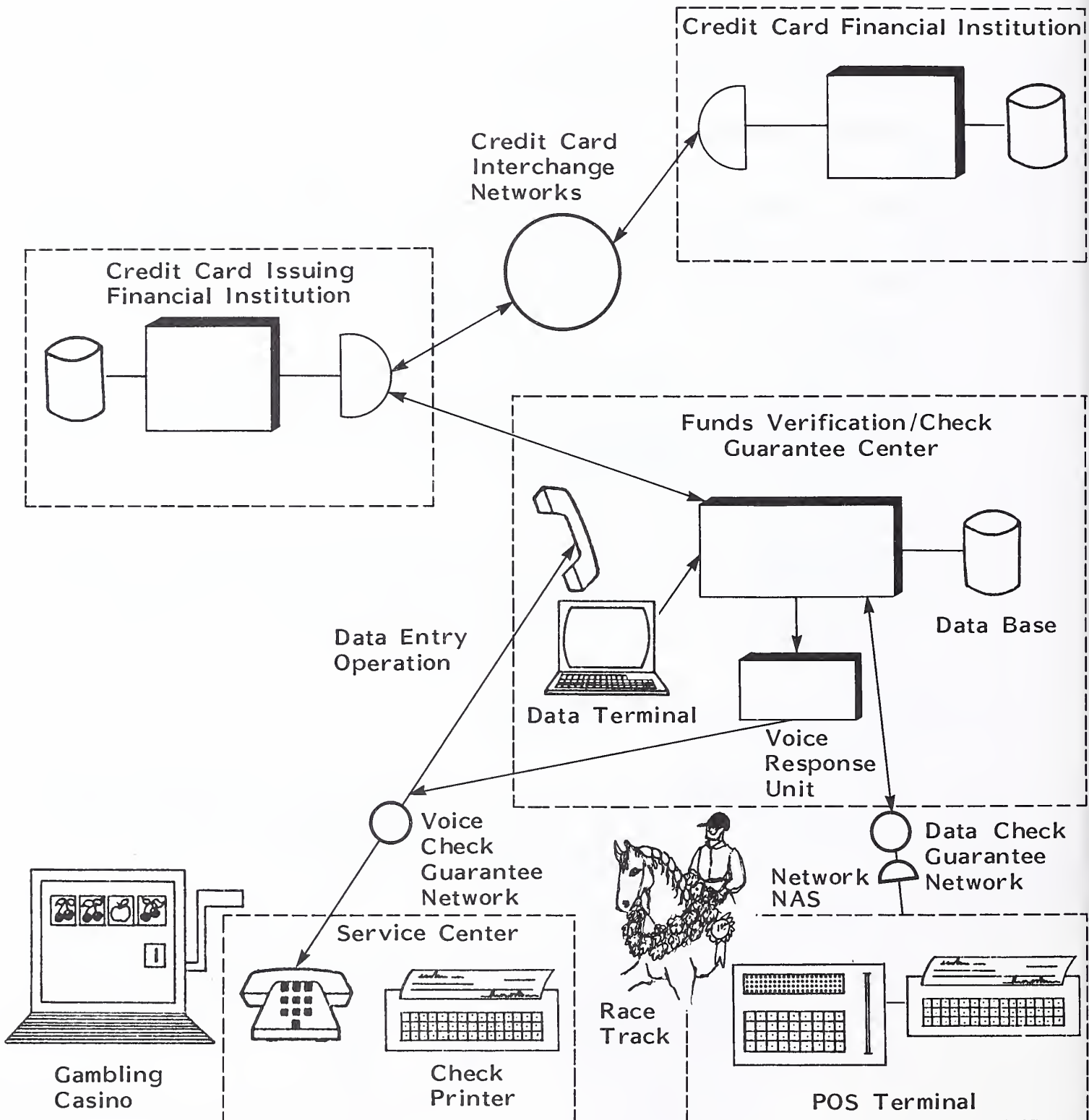


- The check is guaranteed by the check guarantee services vendor. The authorized service center deposits the check, receiving funds from the check guarantee vendor.
- The check guarantee vendor receives funds plus service charges ranging from 2-6% from the trucking company. For fleet operations truckers are provided with a pre-coded set of checks for the trip. The checks can be guaranteed directly by the check guarantee center, reducing response time from five minutes to less than one minute.
- Latest service offerings include electronic verification/guarantee transactions. Terminals with modems and attached check printers permit verification/check guarantee transactions to be accomplished in well under one minute.
- Data terminals utilized by trucking company dispatchers enter driver/route/funds allocation in the host processor data base at the verification/guarantee operations center.
- Plastic cards are used for fleet fuel purchases--further speeding up the check guarantee transaction. Transaction data is used or creating a fuel price data base highlighting the most economic place to buy diesel in a given area.

c. Leisure Time Service Centers

- Another highly successful vertical market application of check guarantee is for the leisure time industry. The funds verification/check guarantee system for the leisure time industry is illustrated in Exhibit III-15.
- The guarantee service provided is to guarantee a check issued by the vendor based on major credit card authorization. Independent agents of the vendor located at gambling casinos, race tracks, and other leisure time operations provide retailer services to consumers wanting funds.

FUNDS VERIFICATION/CHECK GUARANTEE SYSTEMS
FOR THE LEISURE TIME INDUSTRY



- The agent contacts the data entry operator at the guarantee center who enters the card number, amount, and agent identification on the host processor. The vendor acts as an agent for a credit card issuing financial institution.
- The transaction is sent to the issuing financial institution. If the account is not held there, the transaction is switched via a credit card interchange network to the appropriate credit card financial institution. Card authorization results in check guarantee approval being returned to the leisure time services center either by the data entry operator or increasingly by voice response units.
- The service center creates a check guarantee by the vendor, payable to the consumer, endorsed to and cashed by the service center. Fees for the service are approximately 4% of the check amount--1% to the service center operator, 1% to the credit card issuing financial institution, and 2% to the funds verification/check guarantee services offerer.
- At settlement, funds (including net fees) are transferred from the credit card financial institution to the check guarantee services offerer's account.
- Latest service offerings include installation of POS terminals which provide for electronic authorization/check guarantee transactions. The terminal incorporates a credit card strip reader and a check printer. Electronic transactions are completed in one to two minutes, including check endorsement, as opposed to a range of five to eight minutes for voice-check guarantee.

E. SERVICE PRICING

I. CREDIT CARD AUTHORIZATION PRICING

- The pricing of credit card authorization services is usually bundled with the package of credit card services offered by financial institutions to retailers. Bundled services include:
 - Credit card application evaluation and processing.
 - Plastic card issuance.
 - Credit transaction authorization.
 - Credit card transaction balancing, clearance, and settlement.
 - Statement preparation, payment, and collection.
- The incentives to the retailer are increased sales (through customer convenience), advertising, elimination of handling accounts receivable and, to a large extent, loss liability.
- Financial institutions charge a percentage (2-6%) of the transaction dollar amount. The percentage is a function of dollar volume, number of transactions, and type of retail establishment.
- Few financial institutions provide the entire range of credit card services directly to retailers. Some contract virtually all of the program to one or more participating vendors.
 - Visa/MasterCard data networks are used for transaction interchange and are a primary source for settlement.

- Computer services vendors are a primary source of voice and audio response authorization services.
- Bank card associations and computer services vendors are primary sources of credit card issuance, processing, statement preparation, collection, and account maintenance.
- Unbundling is occurring both in services rendered to financial institutions and to (at least) large retailers. Entry of VAN vendors and large retailers offering their national VANs for financial transaction processing into the marketplace is expected to accelerate the unbundling process.
- The portion of the discount rate that financial institutions charge retailers for the loss liability on credit card transactions is related to the authorization system (paper, voice, authorization terminals, ECR, etc.) selected by the retailer. Financial institutions frequently sell or lease terminals at highly attractive rates in order to benefit from the reduction in settlement fees offered by MasterCard (1.55% versus 1.7%) and Visa (1% versus 1.64%) when all credit card transactions are authorized through electronic methods.
- INPUT's assessment of credit card authorization costs are as shown in Exhibit III-16. The costs represent a consensus of the vendors interviewed, expert opinion, and industry data. The costs were used to determine information systems expenditures in Section B and in the Forecast in Section C above.
- Voice response, which is operator dependent, is of course the most expensive. It is not likely to be significantly affected by communication industry deregulation. Voice credit card authorization is also the slowest method of services delivery.
- Audio response replaces the operator for half of the authorization transaction and reduces response time by 25-40%.

EXHIBIT III-16

CREDIT CARD AUTHORIZATION COSTS BY TYPE IN 1985

TYPE	COST RANGE PER TRANSACTION
Voice	60¢-70¢
Audio Response	25¢-50¢
Point of Sale/Electronic Cash Register	10¢-25¢
Computer to Computer	5¢-6¢
VAN	4¢-6¢

- Total electronic credit card authorization is heavily dependent upon data communication costs. The response time is five seconds or less.
- Revising rate structures could well increase the cost of all electronic transactions by as much as three cents as deregulation takes place in the communications industry.

2. CHECK VERIFICATION/GUARANTEE PRICING

- Check verification/guarantee costs depend, as shown in Exhibit III-17, upon the types of services offered.
- Check verification services alert the retailer to bad checks and potentially marginal ones, but leave the credit decision in the hands of the retailer. Check verification services are generally regional or local in nature and are contracted for primarily between the services offerer and the retailer directly.
- Check verification services are priced according to the type of verification utilized and on transaction volume. Check verification costs run somewhat higher (20-30%) than corresponding credit card authorization costs.
 - There are no interchange networks involved (except occasional interchange with credit card networks).
 - Transaction volume for check verification is less than one-tenth credit card authorization transaction volume.
- Check guarantee services are primarily offered to retailers directly. Even when offered to financial institutions, the services offerer underwrites check losses.

EXHIBIT III-17

CHECK VERIFICATION/GUARANTEE COSTS
BY TYPE IN 1985

TYPE	COST RANGE PER TRANSACTION
Verification	
● Voice	60¢-80¢
● Audio Response	30¢-50¢
● Point of Sale/ Electronic Cash Register	15¢-25¢
Guarantee	1.5%-6% of Check Amount

- Check guarantee services are primarily priced on the basis of a percentage of the check dollar amount. The percentage varies on retailer type, with some discount given for large volume such as in the case of national retailers.
- Check verification and some guarantee services use proprietary plastic cards for authorization transactions. Consumers have been willing to pay an annual fee (up to \$10) for the service convenience. Underwriting costs are considerably reduced, resulting in services offerings priced on transaction and on dollar amount with discounts for both transaction and dollar volume.
- Check guarantee services vendors utilize their regional and national networks. There is no check guarantee interchange network. However, check guarantee vendors conduct interchange with credit card authorization vendors and credit card interchange networks.

F. TRENDS

I. FRAUD/LOSS

- Credit card industry losses in 1984 were estimated at over \$3 billion, or about 1.2% of the total charge volume. The major portion (over 80%) is related to credit losses from things like delinquency, bankruptcy, and nonpayment. Over 15% is related to fraud from card holders, criminals, and merchant employees. The proportion related to fraud is rising at a considerably greater rate (over 13% annually) than total losses (approximately 4% annually).
- It is toward containing and hopefully decreasing credit card loss that industry participants are emphasizing low cost and highly functional authorization terminals, integrated networks, and security technology.

2. TERMINALS

- Terminal vendors are marketing a wide variety of intelligent authorization, POS, and ECR terminals both directly and through financial institutions to virtually all retailers. Characteristics of typical terminals are shown in Exhibit III-18. Terminals are differentiated as to functional capability at three price levels.
 - Low cost authorization terminals capable of accessing up to three networks with auto dialing capability.
 - Point-of-sale terminals for dial up and lease line, handling multiple protocols and message formats for half a dozen data networks with microprocessors capable of handling data capture, software and data downloading, and auxiliary pin pads and printer units.
 - Integrated electronic cash registers (ECR) capable of handling sales, data capture and settlement, and a wide variety of protocols and data messages.
- All of the newer units are capable of handling credit/card authorization and check guarantee.
- The latest models contain microprocessors and memory storage, some are even IBM/PC compatible. The trend is toward POS capability to handle a wide variety of applications beyond credit card authorization/check guarantee.

3. NETWORKS

- A wide variety of voice and data networks are involved in credit card authorization/check guarantee.

TYPICAL TERMINALS USED FOR CREDIT CARD AUTHORIZATION/CHECK GUARANTEE SERVICES

			CHARACTERISTICS															PRICE RANGE (\$)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
			300 BPS Dial	1200 BPS Leased	Auto Dial	Card Strip Reader	Phone	Function Keys	Multiple ID's	Receipt	Multiple Protocols	Sales Processing	Bar Code Reorder	Pin Pad	Power Backup	Data Capture	Down Load Capability																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
TERMINAL TYPE	TYPICAL VENDORS	MODEL NUMBER	X	-	L	X	-	1 to 4	1 to 6	6 to 12	4 to 16	6 to 12	0	6 to 12	-	0	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

- Large financial institutions operate dial-up and polled leased-line networks in their region.
 - Credit card processors (both bank card associations and commercial processing vendors) have expensive regional and national networks.
 - Visa and MasterCard have national authorization and settlement interchange networks.
 - Check guarantee vendors offer national voice and data network services.
- Standardization has not been a byword between either terminal equipment, network protocol, or message format characteristics. Integration is being achieved at the terminal end through increased intelligence in the terminal. Networks achieve interface through protocol and message conversion microprocessors at initial data entry node and between networks.
 - The rapidly growing volume of POS and ECR electronic transactions cannot be effectively handled by existing authorization networks.
 - MasterCard is using TYMNET for MasterCard automated point-of-sale network services.
 - Visa is building its own Merchant Electronic Delivery System (MEDS) utilizing an IBM Series I distributed dial-up packet switching system and ANSI protocol and message communication conversion microprocessors.
 - The trend is toward integrated network services that will handle the full range of terminal protocols and message formats, for both credit card authorizations and check guarantee information services.

- Computer services vendors, including VAN vendors, appear best able to offer integrated financial network services on a national basis.

4. OTHER SERVICES

- The capability of offering authorization and guarantee services for credit cards and checks affords vendors many opportunities to offer additional services. These services can be offered directly to client retailers, financial institutions, and commercial companies (i.e., trucking companies), or into new markets utilizing existing hardware, software, network services, and data entry operator personnel.
- Increased intelligence in authorization, POS, and ECR terminals permit offering services for data capture, transaction balancing, funds clearance, and settlement.
- Intelligent (POS/ECR) terminals can be downloaded to handle order entry and inventory control services.
- Intelligent terminals interconnected to financial institutions permit the offering of cash management services.
- Utilizing check guarantee networks, interstate trucking permits can be issued to independent truckers and truck service centers.
- Credit card and check guarantee computer services vendors can utilize existing capabilities to run both telemarketing and teleordering services through their national voice networks.
- Reservation services to airlines, auto rental, motels, and hotels is another area where authorization technology is directly applicable.

G. INFLUENCE FACTORS

I. TECHNOLOGY

a. Smart Card

- A number of experiments are underway to test the economic viability of microprocessor chips embedded in plastic cards. The microprocessor contains both storage and protected secure areas. Storage can be used for consumer credit/debit transactions/balances. The secure area contains authenticator and customer identification information which can be accessed by the appropriate transaction network through an authorized terminal.
- The attractiveness of microcard technology is the ability to utilize the intelligent card for a wide variety of financial transaction services, including credit, debit, reservations, quotations, medical, and electronic mail.
- Coupled with personal identification number (PIN) technology, the smart card will be highly effective in reducing credit/debit fraud.
- A major barrier in widespread implementation of intelligent card technology is the modification required to the installed base of ATM and more expensive POS terminals.
- Although potentially attractive, INPUT believes that intelligent cards may find widespread use in the credit authorization/check guarantee marketplace very late in the forecast period, if at all.
- MasterCard is conducting smart card tests of the Casio Microcard, using modified Datatrol terminals in Florida and Smart Card Internationals and using modified GTE POS terminals and DIEBOLD automatic tellers in Washington, D.C.

b. Voice Input

- Microprocessor driven technology is becoming available which can synthesize, at least, a limited vocabulary from human voice to corresponding digital data with increasingly improving accuracy. It is only a matter of time when voice activated digital input becomes economically viable.
- The use of voice activated digital input appears attractive in credit card authorization/check guarantee markets, where transactions can be described in a very limited (if not completely numeric) vocabulary.
- INPUT believes that voice activated input will become a significant data entry method late in the forecast period.

c. Fraud Protection

- There are a number of technologies under development and in various stages of implementation that address fraud protection. All attempt in some measure to identify the bearer and to insure that the financial transaction card is valid (not counterfeit).
- Telecredit, through its subsidiary Light Signatures, Inc., has developed a fiber imbedded card technology which virtually assures the authenticity of cards passed through strip readers containing polarized light stations.
- Alternate technologies consider the use of biometrics and holography to combine personal identification with transaction card validity.
- INPUT believes that the technologies insuring card validity (with high probability) will be implemented within the forecast period.

- The more difficult, but less critical, problem of tying the user to a valid card has, in INPUT's opinion, little prospect of demonstrating economic viability during the forecast period.

2. COMPETITION

a. Debit Cards

- Debit cards are a direct substitute for checks in the retail environment. If widely used, debit cards could impact check authentication/guarantee information services. Since only 2% of current check dollar volume is currently guaranteed, INPUT believes that the debit card may one day impact check verification services but will have little impact on check guarantee services over the forecast period.
- Consumer spending using debit cards of under \$4 billion in 1984 was slightly over 1% of total consumer spending using credit cards. Currently, except for purchasing gasoline, users have little incentive to use debit cards as opposed to credit cards for retail purchasing. Consumers believe that consumer credit laws give them a degree of protection from buying unsatisfactory products or services that they would not have in utilizing the equivalent of cash for debit card transactions.
- INPUT believes that debit cards represent an additional financial transaction to which authorization/guarantee services could be applied. Debit cards will not significantly impact the volume of credit card transactions during the forecast period.

b. Commercial Companies

- INPUT believes that entry of major retailers into the credit authorization/guarantee marketplace will, in addition to creating competition, expand the marketplace through offering existing and additional services on a national basis.

- INPUT believes that national retailers will become particularly effective in signing up small, local, and larger regional retailers for authorization, data capture processing and clearance services, greatly increasing the retail terminal base--a base to which to offer additional electronic information services.
- Sears, Roebuck and Co. has established a Credit Enterprises Division. In addition to offering its own electronic credit/payment card, Sears has expanded its national EFT network with well over 50 IBM Series I mini-computers to act as communication nodes at Sears stores nationally.
- Sears is offering a full line of credit authorization and electronic processing of credit and debit card payments. The network can interconnect to a wide variety of authorization, POS, and ECR terminals, can accept major credit cards as well as bank debit cards, maintains credit card negative files, and interfaces with bank debit card and credit card authorization and interchange networks.
- Services are targeted directly to retailers. Services are priced on an unbundled and per transaction basis.
- J. C. Penney, Inc. has established J. C. Penney Systems Services, Inc. which offers individually tailored POS systems services to retailers and financial institutions. Penney's has expanded its national EFT network which currently has over 40,000 on-line POS terminals through IBM Series I at the nodes. The network interfaces with a wide variety of authorization, POS, and ECR terminals, interfaces with bank debit card network and credit card data and interchange networks.
- Working with the retailer and the retailer's financial institution, Penney's provides lease lines or dial-up service, and supports the customer in terminal installation, testing, help desk services, and application development where necessary.

IV THE VENDORS

IV THE VENDORS

A. COMPETITIVE ENVIRONMENT

- Five types of vendors compete in the U.S. credit card authorization/check guarantee marketplace.
 - Less than 20 commercial check verification/guarantee processing vendors.
 - Half a dozen commercial credit card authorization processing vendors.
 - Four regional credit card processing associations.
 - Less than 50 financial institutions, primarily large commercial banks.
 - Five value-added networks (VAN) vendors.
- There is some overlap among vendors regarding types of services offered, as some vendors are active in more than one market segment. The market is characterized by a number of major vendors in each market segment with no one vendor yet dominating the marketplace.
- Commercial check verification/guarantee vendors were, as shown in Exhibit IV-1, the most significant vendor offerer with just over 40% of the total market.

EXHIBIT IV-1

VENDOR SHARE OF THE U.S.
CREDIT CARD AUTHORIZATION/CHECK GUARANTEE MARKET
BY VENDOR TYPE IN 1984

VENDOR TYPE	REVENUES (\$ Millions)	MARKET SHARE (Percent)
Commercial Check Verification/ Guarantee Vendors	\$250	41%
Commercial Credit Card Authorization Vendors	150	24
Credit Card Associations	90	15
Financial Institutions	60	10
VAN Vendors	60	10
Total	\$610	100%

- Commercial credit card authorization vendors together with credit card associations, both considered as third-party vendors, comprise another 40% of the existing marketplace.
- Financial institutions do the major portion of their credit card authorization operations in-house. The portion of credit card authorization services offered to other financial institutions represents 10% of the total computer services marketplace.
- VAN vendors, including Visa and MasterCard Interchange networks, derive the remaining 10% of the computer services marketplace, offering services to the other four types of vendors, including financial institution in-house operations.
- The market has considerable growth potential. Competition among current vendors is strong. Opportunities for market entry and expansion still exist due to rapid growth of the number of electronic authorization, POS, and ECR terminals and the sheer volume of credit card and check transactions.
 - Less than 25% of some 7.5 billion credit card transactions currently go through the authorization process.
 - Only 2% of over \$470 billion in retail checks are currently verified/guaranteed.
- Entry of major retailers and other companies into the marketplace will increase competition and is likely to expand the overall marketplace.
 - Sears and J. C. Penney as commercial retailers.
 - TYMNET, GEISCO, ADP and other computer services vendors offering network services through their national networks.

- Telecommunication vendors, including AT&T-IS.

B. THE VENDOR MARKET SHARE

I. CREDIT CARD AUTHORIZATION SERVICES

- Commercial vendors are a major force, as shown in Exhibit IV-2, in the U.S. credit card authorization marketplace, processing primarily for financial institutions and, in some instances, directly for retailers. Commercial vendors as a group control just over 40% of the market.
- The four remaining regional credit card associations, some of whom are in merger/acquisition negotiation with commercial vendors and select financial institutions, have computer services revenues representing 25% of the total market.
- Commercial vendors and credit card associations, as a group called third-party vendors, control just over three-quarters of the market.
- Large commercial banks and other financial institutions, processing for other financial institutions, garner over 15% of the credit card authorization marketplace.
- VAN vendors, including the MasterCard and Visa Interchange networks, make up the remaining portion of the market, deriving interchange fees from third-party vendors and financial institutions for credit authorization involved in both financial institutions in-house and computer service credit card authorization services.
- Half a dozen vendors compete in the commercial processing sector of the market. Two vendors, First Data Resources and National Data Corporation,

EXHIBIT IV-2

VENDOR SHARE OF THE
U.S. CREDIT CARD AUTHORIZATION MARKET
BY TYPE IN 1984

VENDOR TYPE	REVENUE (\$ Millions)	MARKET SHARE (Percent)
Commercial Credit Card Authorization Vendors	\$150	41%
Credit Card Associations	90	25
Financial Institution	60	17
VAN Vendors	60	17
Total	\$360	100%

dominate the commercial processing vendor sector, controlling over 70% of the current marketplace, as shown in Exhibit IV-3.

- Nabanco, originally a credit card association, and now a subsidiary of Continental Telephone, has recently raised its market share to nearly 20%.
- Telecredit, Inc., whose primary market focus is check guarantee services, has visible presence in the credit card authorization marketplace.
- The marketplace share determination, as shown in Exhibit IV-3, is INPUT's assessment and does not include significant revenues for other portions of credit card information services such as processing, data preparation, clearance, and settlement.

2. CHECK VERIFICATION/GUARANTEE SERVICES

- Less than 20 commercial processing vendors compete in the U.S. market for check verification/guarantee services. No one vendor dominates the marketplace.
- Three vendors as a group, shown in Exhibit IV-4, currently control nearly three-quarters of the existing market.
- Comdata Network, Inc., offering services to independent truckers and to highly profitable leisure time markets, is the leading vendor in the U.S. market.
- Offering services to the retail market nationwide, primarily through check guarantee programs, Telecredit, Inc. controls just short of a quarter of the total market.
- Utilizing franchise arrangements as well as direct services offerings, Telecheck Services Company's total revenues (including international) are

EXHIBIT IV-3

COMMERCIAL PROCESSING VENDOR SHARE OF
THE U.S. CREDIT CARD AUTHORIZATION MARKET IN 1984

VENDOR	REVENUES (\$ Millions)	MARKET SHARE (Percent)
First Data Resources	\$ 56	38%
National Data Corporation	50	33
Nabanco	28	19
Telecredit, Inc.	8	5
Others	8	5
Total	\$150	100%

EXHIBIT IV-4

COMMERCIAL PROCESSING VENDOR SHARE OF THE U.S. CHECK VERIFICATION/ GUARANTEE MARKET IN 1984

VENDOR	REVENUES (\$ Millions)	MARKET SHARE (Percent)
Comdata Network, Inc.	\$ 74	29%
Telecredit, Inc.	59	24
Telecheck	53	21
Fundsnet Inc.	12	5
Comp-u-check	7	3
Chilton	4	2
Others	41	16
Total	\$250	100%

considerably greater than U.S. revenues--revenues which represent just over 20% of the total market.

C. ANALYSIS OF VENDOR PRODUCTS AND SERVICES

- Detailed company profiles on selected vendors and their products and services are presented in Chapter V. The following is an analysis of the vendor's services relating to credit card authorization and check verification/guarantee.

I. FIRST DATA RESOURCES (FDR)

- Maintaining a data base of over 22 million customers, FDR processes more than 550 million transactions annually for 650 banks. FDR also does credit authorization for a large number of other banks and financial institutions.
 - Approximately 70% of nearly \$200 million 1984 revenues was related to credit card operations. INPUT estimates that 40% of credit card revenues are related to credit card authorization.
 - FDR provides voice and electronic authorization services through its national network which is interconnected to the Visa and MasterCard Interchange networks and to check verification/guarantee networks where FDR is a wholesaler of those services.
 - INPUT estimates that 40% of some 90 million authorization transactions are still handled via voice network.
 - Authorization services encompass voice network, audio response, dial-up POS terminals, lease-line POS terminals, electronic cash registers (ECR), and CPU-CPU transactions.

- FDR has been able to successfully leverage its credit card authorization technology into offering telemarketing--especially television marketing--air line reservations (People Express), cable TV transaction processing, and cash management.

2. NATIONAL DATA CORPORATION (NDC)

- National Data Corporation provides credit card services to nearly 200 banks directly and authorization services for a large number of other financial institutions including the TOTAL system of 73 institutions.
 - Nearly 40% of approximately \$140 million 1984 revenues were related to credit card operations. INPUT estimates that close to 80% of NDC's credit card services revenues support over 110 million authorization transactions.
 - NDC provides voice as well as electronic authorization services.
 - Implementing an electronic data capture system in addition to offering authorization, NDC also provides for transmission reconciliation and clearance of credit transactions on a daily basis.
 - NDC is involved in credit card telephone authorizations. In addition to authorizing credit card transactions (Visa, MasterCard, American Express), NDC rates the call and transmits the data electronically for credit settlement and billing.
 - NDC has leveraged its credit card technology and national network to offer telemarketing, consumer market ordering, order fulfillment, and cash management information services.

3. COMDATA NETWORK, INC. (COMDATA)

- Comdata offers specialized funds transfer services to two market niches: truck transportation and leisure time (gambling) industries. These services include a form of funds transfer, first between Comdata through the retailer (authorized agent) to the consumer, and then between Comdata and the trucking company or the financial institution involved.
 - Comdata offers its Comcheck[®], Express Comcheck Service, and Fuel Express Services to well over 100,000 independent truckers operating with some 6,500 trucking companies nationwide.
 - Comdata offers a funds transfer service to Visa and MasterCard members desiring cash at leisure time locations (gambling casinos, race tracks, etc.).
 - Comdata acquired Instacom, Inc., a funds transfer and check verification/guarantee company, in 1983. Approximately 70% of the Cashex information services is for check verification. Over 90% of nearly \$81 million in 1984 revenue was related to check verification/guarantee services--80% for funds transfer services to the trucking and leisure time industries market niches and 20% for Cashex check verification/guarantee. By concentrating in highly specific market areas, Comdata has been able to achieve revenue growth exceeding 27% annually over the past five years.

4. TELECREDIT, INC.

- Telecredit offers check verification/guarantee services and credit card authorization services. Check verification/authorization services are offered directly to retailers and through financial institutions. Credit card authorization services are offered primarily in conjunction with financial institution credit card programs.

- Approximately 60% of Telecredit's \$88 million in calendar year 1984 revenues was related to check guarantee services.
- INPUT estimates that 25% of Telecredit's credit card information services was related to credit card authorization. Telecredit's services delivery is highly automated with only approximately one-third of total authorizations handled by voice services.
- Telecredit is marketing its own point-of-sale terminal manufactured by DMC Systems, Inc. which it places directly with retailers. Over 6,000 have been installed nationally. In addition, the Telecredit network supports in excess of 10,000 terminals sponsored by financial institutions.
- Telecredit bases its risk decisions upon data that is gathered about adverse check cashing history, cash cashing patterns, check amount, and type of retail establishment.

5. FUNDSNET, INC.

- FundsNet, Inc., with 1984 revenues approaching \$12 million, offers its Dial-A-Check[®], Action Check^{T.M.}, and National Purchasing System^{T.M.} to independent truckers and its Cash Call^{T.M.} check guarantee service to leisure time markets in competition with Comdata Network, Inc.

6. COMP-U-CHECK, INC.

- Comp-U-Check, Inc. offers its Take-A-Check verification service and its Sure-Check guarantee services primarily to retailers in the Great Lakes Region. Sure-Check files are accessed via drivers licenses only. The data base contains information from retailers, law enforcement agencies, financial institutions, and other sources. Approximately 80% of 5 million transactions covering nearly \$500 million in dollar volume are guaranteed.

7. OTHERS

- National Bank Card Corporation (Nabanco), originally a credit card association was subsequently acquired by Continental Telephone. Nabanco offers credit card processing, including authorization, to well over 200 financial institutions.
 - Nabanco's rapid growth (25% annually) was aided by acquisition of Chase Manhattan Merchant Services Division in 1983. Of nearly \$79 million in 1984 revenue, 90% of which are for the U.S., INPUT estimates that just over 40% are related to credit card authorization services.
 - Nabanco is perhaps the largest vendor of electronic authorization services, processing approximately 200 million electronic transactions in 1984.
- Telecheck Services company, originally a subsidiary of Tymshare and now part of McDonnell Douglas Information Services Company, offers both check verification and guarantee information services. The services are offered directly and through franchise operations both in the U.S. and internationally.
 - Processing nearly 15 million transactions annually with check volume authorized exceeding \$3.5 billion--70% of which are guaranteed--1984 worldwide revenues are estimated at \$84 million. INPUT estimates that 70% of Telecheck's revenues are U.S. related.
 - Telecheck's operations are heavily automated. Approximately 40% of total authorizations are serviced by telephone/data operator. Telecheck's files can be accessed by drivers license or one of five major credit cards.

- Telecheck bases its risk decisions on account history supplied through its own records and information supplied by retailers, banks, government and law enforcement agencies, and the type of retail establishment.
- Believing heightened consumer awareness of the ease of retail check utilization is key to market expansion, Telecheck has embarked on a national television advertising campaign.
- Chilton, Inc. offers its Checktronic verification/guarantee services through more than 20 financial institutions to over 3.5 million consumers in the southwest. Processing over 1.5 million transactions, 90% of which were for verification services, Checktronic uses the Chilton Credit Data Network to deliver its information services.
 - Chilton accesses its files by drivers licenses or major credit cards. Chilton began to offer check guarantee services in mid 1984.
 - Chilton is developing a turnkey system which distributes authorization processing to the retail environment. Data bases are down-loaded and updated as necessary from their central host.
- National Bank of Detroit acquired Computer Communications of America, Inc., formerly Charge Card Association, reducing the number of regional credit card associations to four. Computer Communications authorizes MasterCard and Visa transactions for more than 300 institutions in 11 states.
- The four remaining regional processing associations are:
 - Southwestern States Bank Card Association in Dallas.
 - A consortium of Eastern States Bank Card Association, Inc. and Eastern States Monetary Services, Inc. in Lake Success, New York.

- Credit Systems, Inc. of St. Louis.
- Atlantic States Bank Card Association in Raleigh.
- The remaining bank card associations process MasterCard and Visa transactions for more than 1,000 financial institutions. The four associations as a group represent 25% of the credit card authorization marketplace.

V COMPANY PROFILES

COMPANY PROFILE

FIRST DATA RESOURCES, INC.
10805 South Old Mill Road
Omaha, NE 68154
(402) 399-7000

P. E. Esping, Chairman and CEO
Robert E. Masterson, President
Public Corporation, OTC
Total Employees: 6,700
Total Revenue, Fiscal Year End:
1984: \$203,001,000
Computer Services Revenue:
\$182,700,000*

THE COMPANY

- First Data Resources Inc., founded in 1971, is the nation's largest third-party data processor of debit and credit card transactions, providing on-line data base information services to more than 650 banks across the U.S. The company also provides processing services for telemarketing, cash management, cable television, airline reservations, and nine-digit ZIP code addressing. During 1983, First Data expanded its services to include third-party hardware maintenance.
- In 1980 American Express Company purchased 80% of the capital stock of First Data for approximately \$50 million and the remaining 20% was acquired over the next three years for an additional \$30 million.
 - In 1983 American Express transferred all of its First Data shares and rights to American Express Travel Related Services Company (TRS Co.), a wholly owned subsidiary of American Express.
 - In June 1983 First Data was recapitalized and an amendment was adopted authorizing 65 million shares of common stock, 20 million shares of Class A stock, 3 million shares of Class B stock, and converting and exchanging the former capital stock to 18,760,000 shares of Class A stock.
 - During 1983 First Data paid TRS Co. a \$58 million dividend, sold 2,240,000 shares of Class B stock to 34 key employees, and sold 4 million shares of common stock in an initial public offering for \$56 million. Proceedings from Class B and common stock sales were used to repay debt incurred to pay the \$58 million dividend to TRS Co.
 - As of December 31, 1984, TRS Co. owned 100% of First Data's outstanding Class A stock, representing approximately 75% of the company's capital stock and approximately 96% of the voting power.

*INPUT estimate

FIRST DATA RESOURCES, INC.

- 1984 revenue reached \$203 million, a 37% increase over 1983 revenue of \$148.6 million. Net income rose 31%, from \$20.6 million in 1983 to \$27 million in 1984. A five-year financial summary follows:

FIRST DATA RESOURCES INC. FIVE-YEAR FINANCIAL SUMMARY (\$ thousands, except per share data)

ITEM \ FISCAL YEAR	1984	1983	1982	1981	1980
Revenue	\$ 203,001	\$ 148,564	\$ 115,969	\$ 83,401	\$ 54,470
• Percent increase from previous year	37%	28%	39%	53%	7%
Income before taxes	\$ 51,328	\$ 39,169	\$ 29,454	\$ 23,558	N/A
• Percent increase from previous year	31%	33%	25%	N/A	N/A
Net income	\$ 27,007	\$ 20,613	\$ 16,046	\$ 12,810	\$ 6,137
• Percent increase from previous year	31%	28%	25%	109%	54%
Earnings per share	\$ 1.08	\$ 0.88	\$ 0.71	\$ 0.56	\$ 0.27
• Percent increase from previous year	23%	24%	27%	107%	80%

- Approximately 35% of the increase in 1984 revenue was attributed to the company's principal product, Transaction Services, mainly through increased credit card transactions brought about by an improved economy. The remainder of the increase was attributed to growth in each of the company's newer product lines.
- Research and development expenditures were approximately \$6 million (3% of revenue) in 1984, \$5 million (3% of revenue) in 1983, and \$3.7 million (3% of revenue) in 1982.
- Acquisitions made by First Data over the past two years include the following:
 - In September 1984 First Data acquired KMP Computer Systems of Los Alamos (NM). Terms of the acquisition were not disclosed. KMP provides cable television subscriber billing services for smaller cable companies.
 - On July 3, 1984, First Data acquired the field service operations of ATV Systems, Inc. of Santa Ana (CA) for \$8.7 million.
 - ATV develops, manufactures, and markets microprocessor-based point-of-sale and multifunction office information systems.

FIRST DATA RESOURCES, INC.

- . In accordance with the July 1984 agreement, First Data has agreed to perform the repair and maintenance service which ATV was required by contract to provide to purchasers of ATV equipment.
- . Based on an evaluation of the acquired operations, First Data has subsequently recognized a \$5.7 million reduction in the value of certain receivables and intangibles and believes it is entitled to a refund of a portion of the purchase price. ATV has filed suit against First Data. The matter is pending.
- . These operations have been merged into FDR Field Service Company, a wholly owned subsidiary of First Data.
- On November 30, 1983, First Data purchased 100% of the issued and outstanding common stock of INDESERV Inc. of Littleton (MA) for \$1.6 million in cash to be paid over approximately two years plus additional payments of not more than \$2.7 million based on INDESERV's net income during the four-year period beginning January 1, 1984.
 - . INDESERV, in operation since 1974, is a network of independent service companies providing nationwide field maintenance of data processing and communications equipment.
 - . INDESERV now operates as a wholly owned subsidiary of First Data as part of FDR Field Service Company.
- Revenue for the three months ending March 31, 1985 was \$63.4 million, a 52% increase over \$41.8 million for the same period in 1984. Net income rose 41%, from \$6.6 million to \$9.3 million.
- First Data is currently organized into seven business areas as follows:
 - Transaction Services provides a range of services for the management and automation of debit and credit card activities, including cardholder and merchant account services, credit authorization, embossing, and security services.
 - Telemarketing Services provides business customers a nationwide telephone marketing and information service via WATS Marketing of America, Inc.
 - Cable System Services provides data collection and reporting services for cable television franchise operators.
 - Cash Management Services provides cash and information reporting services primarily for customers with operations at remote locations.
 - Transportation System Services provides telephone reservation processing services for People Express Airlines.

FIRST DATA RESOURCES, INC.

- Government Services provides nine-digit ZIP Code data for the U.S. Postal Service and updating of mail lists for commercial customers.
- FDR Field Services Company provides maintenance services from 60 offices nationwide serving nearly 9,000 customer locations.
- PLANUS provides personal computer maintenance services through its retail stores located in Omaha (NE), Burlington (MA), and Costa Mesa (CA).
- First Data's competitors by business segment, include the following:
 - Transaction Services: National Data Corporation, NABANCO, and various credit card associations.
 - Telemarketing Services: National Data Corporation and NICE Corporation.
 - Cable System Services: Cable Data.
 - Cash Management Services: National Data Corporation.

KEY PRODUCTS AND SERVICES

- Virtually 100% of First Data's 1984 revenue was derived from processing services. Less than 1% was derived from foreign software licenses for its debit and credit card processing system.
- Approximately 66% of 1984 revenue was derived from Transaction Services, 11% from Telemarketing Services, and 20% from the remaining business segments. Interest income represented 3% of revenue. A two-year summary of source of revenue, as estimated by INPUT, follows (\$ millions):

	1984		1983	
	<u>Revenue</u>	<u>Percent of Total</u>	<u>Revenue</u>	<u>Percent of Total</u>
Transaction Services	\$134.0	66%	\$118.7	80%
Telemarketing Services	21.7	11	19.0	13
Cable System Services	8.5	4	4.0	3
Cash Management Services	4.5	2	2.5	2
Transportation System Services	5.5	3	-	-
Government Services	8.5	4	1.5	-
Field Services	15.0	7	0.1	-
Interest	<u>5.3</u>	<u>3</u>	<u>2.8</u>	<u>2</u>
Total	\$203.0	100%	\$148.6	100%

- Transaction Services, accounting for 66% of First Data's 1984 revenue, provides services associated with credit and debit card processing, including cardholder and merchant accounting, credit authorization, embossing, and security services.
 - First Data generally contracts to provide card-related services to its customers for initial terms of four years, with optional renewals by the customer for two years thereafter. These agreements fix various price schedules for the initial term and, depending on the particular services required, may incorporate the passing on to the customer of specified increased operating costs, yearly price increases, and minimum yearly aggregate transaction fees.
 - The services are marketed primarily to financial institutions that issue MasterCard and VISA cards and to bankcard associations composed of banks that have joined together to facilitate entry into the card market. Transaction services are also provided to airlines and, through banks, to retailers that issue credit cards.
 - As of December 31, 1984, the company had service agreements with over 630 banks and four bankcard associations. First Data currently has service agreements with over 650 banks and six associations. Association clients include the New England Bankcard Association (NEBA) in Boston, the Southeast Bankcard Association (SEBA) in Atlanta, Mid-America Bankcard Association (MABA) in Omaha, the Mountain States Bankcard Association (MSBA) in Denver, the Western States Bankcard Association (WSBA) in San Francisco, and the Bankcard Association of Rhode Island (BARI).
 - Through agency relationships between banks, First Data provides services to approximately 3,000 additional financial institutions.
 - Card processing services include data collection and entry, credit card billing, merchant accounting, and statement preparation and mailing. During 1984 First Data processed approximately 503 million card transactions and serviced more than 22 million accounts for its customers, compared to 445 million card transactions and services for more than 19 million accounts during 1983.
 - Debit and credit card transaction records are deposited by merchants in banks and forwarded to one of First Data's branches in Omaha, Boston, Atlanta, or San Mateo (CA) for data entry and balancing.
 - The information is posted to the cardholder account (if maintained by First Data) or (if the account is not maintained by First Data) is transmitted electronically through the VISA or MasterCard network to the bank which maintains the cardholder account.

FIRST DATA RESOURCES, INC.

- . Cardholder transactions are also posted daily to accounts maintained by First Data with data received through the VISA and MasterCard network.
- . First Data prepares daily financial settlements for its customers and provides general ledger accounting input to each customer's accounting system.
- . Updated account information is available daily both on-line through remote terminals and through hard copy.
- First Data's authorization services provide banks and merchants with an on-line credit authorization network for MasterCard and VISA cards. During 1984 the company handled more than 91 million authorization inquiries, a 40% increase over the 65 million in 1983. Authorization services are provided through voice, audio response, terminals, and electronic cash registers.
 - . Approximately 40% of the inquiries are handled by voice authorization through centers in Omaha, Boston, and Los Angeles that are staffed 24 hours a day, seven days a week. Merchants throughout the U.S. access these centers via WATS telephone lines. Voice authorization fees generally range from \$0.60 to \$0.70 per inquiry.
 - . Approximately 20-30% of the inquiries are handled by audio response. Merchants enter their inquiries via a touch-touch telephone and receive a computer synthesized speech response from First Data's Omaha data center. Audio response fees generally range from \$0.25 to \$0.50 per inquiry.
 - . Point-of-sale authorizations are available through terminals that access First Data's Omaha data center via leased lines or direct-dial. Fees range from \$0.10 to \$0.25 per inquiry.
 - . CPU-to-CPU authorizations involve inquiries initiated at the merchant's electronic cash registers, through the merchant's computer to First Data's Omaha data center via leased lines. These authorization services are currently provided to over 50 clients nationwide. Fees generally range from \$0.05 to \$0.08 per inquiry.
- Card Services provides for the storing, embossing, and mailing of various types of plastic cards for a variety of industries.
 - . During 1984 over 24 million cards were embossed and encoded (a 29% increase over 1983) including MasterCard and VISA cards, automated teller machine cards, debit cards, and plastic cards for direct marketing solicitation programs.

- First Data was involved in the development of the laser-imaged micrographic health care card marketed under the name QuiKare by a large midwestern hospital. The card carries personalized medical history information.
- Securities Services functions primarily in the area of bank cards, although the services are also provided to customers in other card-issuing industries. Services include:
 - Receiving and processing notifications from card issuers and cardholders regarding lost or stolen cards. During 1984, 640,000 such phone calls were handled, a 20% increase over 1983.
 - Making preliminary investigations of transactions made or attempted with lost or stolen cards.
 - Investigating fraudulent transactions via 18 locations nationwide.
- During 1984 First Data expanded its services to include wholesale check guarantee services on its existing authorization network. Clients include Telecredit and Telecheck (McDonnell Douglas Information Systems Group).
- Telemarketing Services, accounting for nearly 11% of 1984 revenue, provides telephone marketing services through WATS Marketing of America, Inc., a wholly owned subsidiary. WATS Marketing was acquired by First Data in 1980.
 - The 1984 volume of transactions was 14.5 million, compared to 12.4 million in 1983.
 - Using toll-free telephone lines, WATS marketing provides "inbound" and "outbound" services.
 - Inbound services involve the receipt, on behalf of WATS Marketing customers, of telephone inquiries and merchandise orders from consumers responding to television commercials, printed advertising, direct mail, catalog offerings, and other marketing campaigns conducted by those customers. Inbound production capacity was increased by about 50% during 1984. Up to 250,000 incoming one-minute phone calls a day, seven days a week, can be processed.
 - Outbound services involve calls by WATS Marketing operators, on behalf of business customers, to generate and verify sales, raise funds, conduct market research, renew subscriptions, and other merchandising programs. During 1984 as many as two million outbound calls were generated for a single client. Outbound production capacity doubled during 1984.

FIRST DATA RESOURCES, INC.

- Inbound services are handled in Omaha. Outbound services are provided through Omaha and Lincoln (NE).
- Clients include AT&T, R. J. Ryenolds Tobacco Company, and Proctor & Gamble.
- First Data Management expects Telemarketing Services to grow approximately 25% during 1985.
- Cable System Services, accounting for 4% of 1984 revenue, provides cable television management information and subscriber billing processing services and subscriber billing software for microcomputers.
 - During 1984 services were provided to more than 150 cable systems representing more than 2.5 million subscribers, compared to cable systems representing 1.5 million subscribers in 1983.
 - First Data usually enters into written agreements with its cable television system customers for initial periods of two or three years, with optional renewal periods selected by the customer for periods of at least six months and as long as three years.
 - Processing services include:
 - Subscriber billing through cycle management, with descriptive statements that include individual itemizations and pay-per-view breakdowns by date and time.
 - Centralized payment processing.
 - On-line subscriber inquiry, including collection data.
 - On-line data base management, including work order monitoring, scheduling, and dispatching functions.
 - Consolidated management reporting for financial, operational, and sales/marketing control.
 - Clients include cable systems ranging in size from 1,000 to 180,000 customers, as well as Multiple System Operators (MSOs). MSO clients include Group W Cable, Warner Amex Cable Communications, Tele-Communications, Inc., Cox Cable Communications, Continental Cablevision, and American Cablesystems.
 - With the acquisition of KMP Computer Systems in 1984, First Data has expanded its offerings to include subscriber billing software for microcomputers. The products are targeted to smaller cable systems.
- Cash Management Services, generating an estimated 2% of 1984 revenue, provides cash concentration services under the name CashData^{T.M.} for organizations with multiple locations.

FIRST DATA RESOURCES, INC.

- More than six million transactions were handled in 1984, a 50% increase over 1983.
- Cash management services are marketed both to banks (which incorporate First Data's services as a part of the bank's overall service) and directly to large corporations.
- First Data generally contracts to provide these services for initial terms of one year with optional renewal terms of one year.
- Cash control features include the following:
 - Local branch managers report their daily local bank deposits and operating statistics to First Data via a toll-free telephone number.
 - First Data accumulates the reported amounts from the various branches and reports the aggregate to the client's designated concentration bank, permitting the customer to consolidate funds via wire transfer for overnight investing.
 - In 1984 First Data introduced an Audio Response Service permitting customers to report deposit data using a touch-tone telephone.
- Information reporting features include the following:
 - Prior day reports and detailed activity documentation.
 - Sales and operating data, balance and inventory reports, and accounts payable and receivable.
 - Customized reports by specific operation, area, and type of customer, as well as other variables.
- First Data management states its Cash Management Services are growing 40% to 50% a year.
- Transportation System Services, established during 1984, generated an estimated 3% of 1984 revenue. This group provides telephone airline reservation services for People Express Airlines, Inc.
 - Facilities in Omaha and Jacksonville receive telephone requests from individuals and travel agencies regarding arrival and departure times for flights scheduled by People Express, the costs of such flights, seat availability, and reservations. Operators respond to the requests by accessing People Express' on-line reservation system in Newark (NJ).
 - There are currently over 465 reservation operator positions in Omaha and approximately 350 positions in Jacksonville.

FIRST DATA RESOURCES, INC.

- Government Services, contributing an estimated 4% to 1984 revenue, primarily provides nine-digit ZIP Code (ZIP+4) information to the public through a contract with the U.S. Postal Service.
 - The volume of ZIP+4 transactions in 1984 was 24.9 million, compared to 4 million in 1983. Inquiries are expected to reach 60 million in 1985.
 - First Data provides ZIP+4 information via toll-free telephone lines to the U.S. Postal Service and private mailers.
 - During 1984 First Data installed terminals at 120 postal sites to provide 24-hour on-line access to the central ZIP+4 directory in Omaha which contains over 23 million addresses. This network is expected to expand to 200 sites in 1985.
 - First Data also provides commercial customers with mail list updating services, including conversion to ZIP+4, address corrections, and standardization of format and style to U.S. Postal Service guidelines.
 - First Data plans to expand its services to other governmental agencies at the federal and state level.
 - First Data is currently working with several states to produce an on-line computerized verification system to reduce Medicaid fraud using its card processing and on-line authorization capabilities.
 - Other government activities involving other card-based large-volume transactions are also being researched.
- Hardware maintenance services, contributing an estimated 7% of 1984 revenue, are provided as follows:
 - FDR Field Service Company provides on-site maintenance services nationwide and includes the operations of INDESERV and ATV Service Corporation.
 - PLANUS operates three retail stores from which it sells personal computer maintenance (depot repair) service agreements to individuals and businesses.

INDUSTRY MARKETS

- Approximately 60% of First Data's 1984 revenue was derived from the banking and finance industry and 20% from the retail industry. The remaining 20% was derived from large corporations, the federal government, cable television companies, direct mailers, the medical industry, People Express Airlines, and various businesses whose computers and peripherals are maintained by First Data.

GEOGRAPHIC MARKETS

- One hundred percent of First Data's 1984 revenue was derived from the U.S.
- Branch offices are located in Atlanta, Boston, Los Angeles, and San Mateo (CA).
- Field maintenance services are provided from 60 locations nationwide. PLANUS retail stores are located in Omaha (NE), Burlington (MA), and Costa Mesa (CA).

COMPUTER HARDWARE AND SOFTWARE

- First Data has a NAS AS/9080 and a NAS AS/90000-DPC, operating under MVS/SP installed at its data center in Omaha.
 - The company uses approximately 10,000 terminals, of which approximately 1,800 are remote terminals located in branch offices.
 - Approximately 37 IBM Series/1 minicomputers are used at branch offices and at the data center to collect data and transfer it to the NAS mainframes.
- Clients may access First Data's services via WATS lines, leased lines, FDRnet (First Data's proprietary network), TYMNET, or Telenet.
 - WATS lines are used to access voice authorization centers in Omaha, Boston, and Los Angeles, airline reservation centers in Omaha and Jacksonville, cash management services, and inbound telemarketing services in Omaha.

COMPANY PROFILE

NATIONAL DATA CORPORATION
One National Data Plaza
Corporate Square
Atlanta, GA 30329
(404) 329-8500

L. C. Whitney, Chairman, President,
and CEO
Public Corporation, OTC
Total Employees: 2,400
Total Revenue, Fiscal Year End
5/31/84: \$139,027,000

THE COMPANY

- National Data Corporation (NDC) was incorporated in 1967 in Delaware to provide specialized data processing and facilities management services. NDC's primary services include cash management, credit card, information management, health care, and telemarketing processing, and professional services.
- NDC's fiscal 1984 revenue was \$139 million, an increase of 9% over fiscal 1983 revenue of \$127 million. Net income rose 9% from \$11 million in fiscal 1983 to \$12.1 million in fiscal 1984. A five-year financial summary follows:

NATIONAL DATA CORPORATION FIVE-YEAR FINANCIAL SUMMARY (\$ thousands, except per share data)

ITEM \ FISCAL YEAR	5/84	5/83	5/82	5/81	5/80
Revenue	\$ 139,027	\$ 127,033	\$ 125,877	\$ 101,336	\$ 84,104
• Percent increase from previous year	9%	1%	24%	20%	20%
Income before taxes	\$ 20,647	\$ 19,404	\$ 18,834	\$ 14,181	\$ 11,232
• Percent increase from previous year	6%	3%	33%	26%	23%
Net income	\$ 12,072	\$ 11,040	\$ 11,173	\$ 8,242	\$ 6,769
• Percent increase (decrease) from previous year	9%	(1%)	36%	22%	24%
Earnings per share	\$ 1.03	\$ 0.95	\$ 0.97	\$ 0.73	\$ 0.61
• Percent increase (decrease) from previous year	8%	(2%)	33%	20%	22%

NATIONAL DATA CORPORATION

- The above financials have been restated to reflect the acquisition of Libra Group, Inc. in October 1983.
- Libra now operates as NDC Federal Systems, Inc., a wholly owned subsidiary of NDC.
- A revenue breakdown by service area follows:

NDC REVENUE FROM OPERATIONS, BY SERVICE (\$ thousands)

	<u>5/84</u>	<u>Percent Increase (Decrease) From Pre- vious Year</u>	<u>5/83 (a)</u>	<u>Percent Increase (Decrease) From Pre- vious Year</u>	<u>5/82 (a)</u>	<u>Percent Increase (Decrease) From Pre- vious Year</u>
Data Processing Services						
- Cash Management	\$ 28,256	7%	\$ 26,464	5%	\$ 25,237	17%
- Credit Card (b)	56,069	21%	46,189	16%	39,827	44%
- Information Management	23,226	(16%)	27,717	(11%)	31,165	21%
- Telemarketing	15,020	90%	7,916	58%	4,998	6%
- Health Care (c)	16,456	4%	15,757	33%	11,810	33%
- Miscellaneous	<u>-</u>	<u>-</u>	<u>-</u>	<u>(100%)</u>	<u>430</u>	<u>(70%)</u>
Subtotal	\$ 139,027	12%	\$ 124,043	9%	\$ 113,467	26%
Facilities Management						
- ARCO	<u>-</u>	<u>(100%)</u>	<u>2,990</u>	<u>(76%)</u>	<u>12,410</u>	<u>9%</u>
Total Company Revenue	\$ 139,027	9%	\$ 127,033	1%	\$ 125,877	24%

- (a) Restated due to a reclassification of certain services within the cash management, credit card, and facilities management business segments.
- (b) Includes other facilities management services revenue of \$6,350,000, \$5,953,000, and \$4,961,000 for fiscal 1984, 1983, and 1982, respectively.
- (c) Restated to include the results of Libra Group, Inc.

NATIONAL DATA CORPORATION

- NDC management attributes fiscal 1984 revenue changes to the following factors:
 - Cash Management Services' revenue increased \$1,792,000. Transaction volume accounted for \$550,000 and price increases were \$1,242,000.
 - Credit Card Services' revenue increased \$9,880,000. Transaction volume increases of \$11,289,000 were partially offset by price reductions.
 - Facilities Management Services' revenue is no longer reported as a separate business segment as a result of the termination in October 1982 of the company's facilities management agreement with the Atlantic Richfield Company (ARCO) in connection with ARCO's discontinuance of its credit card.
- Revenue for the three months ending August 31, 1984 was \$33.8 million, a 1% increase over revenue of \$33.3 million for the same period in 1983. Net income for the period declined 60% from \$2.8 million to \$1.1 million.
- NDC is currently organized into three groups as follows:
 - Corporate Financial Services Group includes the operations of Cash Management and Information Management Services.
 - Retail Services Group includes the operations of Health Care and Credit Card Services.
 - Network Resources Group primarily includes Telemarketing Services and Network Resources (credit card phone).
- NDC subsidiaries include the following:
 - NDC Federal Systems, Inc., headquartered in Rockville (MD), formed with the acquisition of Libra, provides professional services to the federal government hospital health care market.
 - National Data Corporation of Canada, Ltd. (formerly National Communications & Data Company, Ltd.) markets cash management, credit card, and telemarketing services in Canada. This subsidiary is headquartered in Don Mills, Ontario.
 - NDC International, Ltd., headquartered in London, markets cash management services throughout Western Europe.
- NDC's principal competitors, by service area, include the following:
 - Cash management: Automatic Data Processing, Chemical Bank, and in-house data processing centers.

NATIONAL DATA CORPORATION

- Credit card services: First Data Resources and various bank associations.
- Information management: Comshare, Tymshare, and in-house data processing centers.
- Telemarketing: Dial America and regional telephone answering firms.
- Health care: Three PM Inc. (3PM) and PharmAssist.

KEY PRODUCTS AND SERVICES

- Approximately 86% of NDC's total fiscal 1984 revenue was derived from its various processing services, 7% from professional services, 5% from facilities management, and 2% from turnkey systems. Services for fiscal 1984 are segmented by NDC as follows (\$ thousands):

	<u>Revenue</u>	<u>Percent of Total</u>
Cash Management Services	\$ 28,256	20%
Credit Card Services	56,069	40
Information Management Services	23,226	17
Telemarketing Services	15,020	11
Health Care Services	<u>16,456</u>	<u>12</u>
	\$ 139,027	100%

- Cash Management Services, available to banks and their corporate customers, include the following:
 - NDC's Deposit Reporting Service permits electronic concentration of local bank deposits from an organization's remote locations into central banks for accelerated funds availability.
 - Bank Balance Reporting Services enable customers of participating banks to receive daily bank balance information so that cash management decisions can be made rapidly. Approximately 5,000 banks participate in this service, involving in excess of 7,500 corporate customers.
 - NDC's Money Transfer System allows corporate customers to initiate wire transfers through banks by terminals located at customers' places of business. Instructions are forwarded by terminal to the sending bank for immediate processing. Twenty-four banks currently subscribe to this service.
 - The Information Reporting Service provides customers with daily or other periodic consolidated management information collected from remote locations, such as data on sales, payroll, disbursements, inven-

tory, and deposits. Approximately 450 customers currently use this service.

- NDC also offers Foreign Exchange Reporting as a complement to its cash management services in the international area.
 - The Cash Management Exchange^{T.M.}, introduced in 1980, is a cash management, financial, and reporting service that provides for the transmission and exchange of information and instructions, both to and from banks, their corporate customers, and other computers via NDC's on-line network.
 - NDC offers NETS^{T.M.} (Network for Electronic Transactions) primarily to bank customers. NETS is a distributed processing network based on Tandem NonStop computers that allows banks to provide advanced financial services to large corporations and to the middle, retail, and consumer (personal computer) markets by linking microcomputers and terminals with NDC's network. Approximately 250 corporations are using the NETS system through subscribing banks.
 - In early 1983 NDC introduced the Treasury Manager System, an IBM PC-based decision support system for treasury functions that can also be used to access NDC's Cash Management Exchange network.
 - NDC provides timesharing through an arrangement with GEISCO in connection with some of its cash management services. The time-sharing capability, which is also offered through NDC's own network, allows each customer to store data and obtain reports that meet their specifications.
 - The Cash Management Academy^{T.M.} was established by NDC in 1982 to offer instruction to corporate and banking clients in the area of cash management theory and techniques.
- Credit Card Services include credit card charge authorization, card processing, and remittance processing for both bank and private label card plans.
 - NDC's credit card authorization services are presently being used by over 176 financial institutions in the U.S. and Canada that issue MasterCard and VISA cards.
 - NETS^{T.M.} (National Electronic Transaction Service) is NDC's nationwide electronic point-of-sale authorization service for both credit cards and checks. Credit requests are transmitted from the merchant to NDC through the merchant's terminal, and the credit authorization is then relayed to the terminal by electronic display or audio response.
 - The service is also capable of supporting additional applications such as NDC's deposit, information, and

- balance reporting services, and other cash management services.
- Approximately 116 financial institutions are presently using NDC's electronic point-of-sale authorization systems.
- Credit authorization is also provided by telephone voice and audio response authorization services.
 - NDC maintains seven regional voice centers that are staffed 24 hours a day, seven days a week.
 - Audio response authorization employs computer-synthesized voice responses to credit inquiries.
- The Total System^{T.M.}, is an on-line credit carding authorization and billing system jointly offered by NDC and a Columbus Bank and Trust Company affiliate.
 - The Columbus affiliate provides the credit card billing and merchant accounting portion of the service, and NDC provides the authorization and data entry components.
 - The system can process both MasterCard and VISA credits for the same customer.
 - A total of 73 banks, credit unions, and savings and loan associations currently use the system.
- NDC provides credit card processing services to 59 clients through its data entry service.
- Remittance processing services provided by NDC include depositing payments to a customer-designated account and providing same-day accounts receivable updates and summary reports. There are currently 23 customers using this service.
- NDC also provides credit card programs for airlines and petroleum companies to support their private label credit cards, including developing software and implementing total systems on a turnkey basis.
- In September 1983 NDC introduced the Electronic Data Capture Point-of-Sale System, offering merchants positive balancing at the point-of-sale, prior to depositing.
 - The system is delivered by either dial-up terminals or electronic cash register interfaces and operates in conjunction with NDC's NETS point-of-sale authorization system.

- .
 - . The system also provides for the storage and retrieval of sales tickets and daily activity reporting by store location.
 - . There are currently four top retailers, representing over 5,000 locations, using the system.
- In early 1984 NDC entered the public credit card telephone market by providing turnkey systems and transaction processing services.
 - . The turnkey system will provide the telephone customer with step-by-step audio instructions on how to complete calls. The system completes computations involving call routing, call length, and credit card identification necessary for appropriate billing.
 - . NDC is in the process of negotiating an agreement with a large nationally known manufacturer of public telephone terminals to be included as part of NDC's total system offering.
- Information Management Services include interactive remote computing, data base, graphics, and microcomputer-based processing services. There are currently more than 525 customers.
- Telemarketing Services are provided to retailers and advertisers who market their products by television and newsprint advertising, direct response mail, and catalogs to the "shop at home" buyer. A broad range of services are available 24 hours a day, seven days a week.
- NDC's Health Care Services Division provides processing services and turnkey systems for pharmacy management and, as a result of the Libra Group acquisition, offers professional services (primarily to the federal government).
- Facilities management services revenue (reported in the Credit Card Services business segment) was \$6.4 million in fiscal 1984.
 - NDC has facilities management agreements with major airline and oil companies under which NDC manages and operates the complete credit card programs for these companies. Services include new account processing; credit and collection; customer billing; remittance processing; accounts receivable accounting; preparation of management information and statistical reports; and other related administrative services.

INDUSTRY MARKETS

- A majority of NDC's fiscal 1984 revenue was derived from the banking and finance and retail industry sectors. The remainder of revenue was derived from petroleum, medical, airlines, and telephone industry clients and the federal government.

GEOGRAPHIC MARKETS

- Approximately 98% of NDC's fiscal 1984 revenue was derived from the U.S. The remaining 2% was derived from Canada, Japan, and Europe.
- U.S. branch offices are located in Ann Arbor, Boston, Cherry Hill (NJ), Lombard (IL), Dallas, Fairfield (NJ), Los Angeles, Miami, New York City, Reno (NV), Rockville (MD), San Francisco, and Tulsa.
- Foreign offices are located in England, Germany, Italy, Japan, Sweden, and Toronto.

COMPUTER HARDWARE AND SOFTWARE

- NDC operates the following equipment:
 - At its headquarters in Atlanta and in communications centers located in Cherry Hill (NJ), Lombard (IL), Boston, Miami, Reno, and Toronto:
 - 3 Univac 1100/80s, 1100 OS.
 - 4 Univac 494s, Omega.
 - 8 DECSYSTEM-10s, TOPS-10.
 - 32 Data General ECLIPSE S/130s.
 - 4 DEC PDP-11/40s, IAS.
 - 15 DEC PDP-11/34s.
 - 2 Tandems.
 - At the Information Management Services' Fairfield (NJ) data center:
 - 6 Honeywell 437s, custom operating system.
 - 1 DECSYSTEM-10/70, TOPS-10.
 - 7 DECSYSTEM-10/90s, TOPS-10.
 - 2 DECSYSTEM-2020s.
 - 8 DEC PDP-11s (used as front-end processors).
 - At NDC Federal Systems' Rockville data center.
 - 1 Harris 300, Virtual Operating System.
 - 1 DEC PDP-11/34, MUMPS.
 - 1 DEC PDP-11/24, MUMPS.
 - 1 Data General 350, AOS, AOS/VS.
 - 1 Data General MV/8000, AOS, AOS/VS.
 - 1 Burroughs 1955, MCP.
 - 1 Altos ACS 8000-12.
- In addition, NDC installs DEC PDP-11/34s and -11/70s, Data General Eclipse S/130s and S/230s, and Texas Instruments 990 series minicomputers in support of its services.

- NDC's communications network uses leased lines, satellite, Telenet, WATS, foreign exchange, Comshare, and GEISCO. Toll-free or local telephone numbers serving 75 major cities are available.
- Information Management Services' network can be accessed via RAPIDNET (a teleprocessing network that is used in conjunction with TYMNET); WATS and FX lines; or TELEX.

COMPANY PROFILE

COMDATA NETWORK, INC.
2209 Crestmoor Road
P.O. Box 15822
Nashville, TN 37215
(615) 385-0400

C. W. Harter, Jr., Chairman and CEO
Jerry L. Yoder, President and COO
Total Employees: 1,150
Total Revenue, Fiscal Year End
12/31/84: \$80,859,612

THE COMPANY

- Comdata Network, Inc., founded in 1969, provides funds transfer services to the trucking industry and to bank credit card holders and offers check verification processing services for retail establishments.
- On October 28, 1983, Comdata completed its acquisition of Instacom, Inc. of Dallas (TX), a corporation providing funds transfer and document transmission services for the trucking industry and check verification and guaranty services for retail establishments.
 - The acquisition was accounted for as a pooling of interests. Stockholders of Instacom received .701 of one share of Comdata stock for each share of Instacom common stock. As a result of this transaction, 3,859,180 shares valued at \$110 million were issued.
 - Instacom's 1982 revenue was \$15.3 million. Revenue for the nine months ending September 30, 1983, prior to their acquisition, was \$16.8 million. Instacom had approximately 300 employees at the time of acquisition.
 - In June 1983 Instacom purchased the assets and liabilities of The Comet Corporation, renamed Instacom Cashex, Inc., for \$6 million in cash and 427,500 shares of Instacom common stock valued at \$4.7 million. Operations of Cashex have been included in the consolidate statement of income since June 1, 1983 and contributed \$7.2 million from its seven months operation in 1983 and \$13.5 million in 1984.
 - Cashex provides check authorization and guaranty services principally in the St. Louis metropolitan area and California.
- 1984 revenue reached \$80.9 million, a 28% increase over 1983 revenue of \$63.4 million. Net income rose 20% from \$11.1 million in 1983 to \$13.3 million in 1984. A five-year financial summary follows:

COMDATA NETWORK, INC.
FIVE-YEAR FINANCIAL SUMMARY (a)
(\$ thousands, except per share data)

ITEM \ FISCAL YEAR	1984	1983	1982	1981	1980
Revenue	\$ 80,860	\$ 63,369	\$ 41,784	\$ 32,700	\$ 23,817
• Percent increase from previous year	28%	52%	28%	37%	30%
Income before taxes	\$ 25,234	\$ 20,198	\$ 15,184	\$ 11,598	\$ 8,113
• Percent increase from previous year	25%	33%	31%	43%	47%
Net income	\$ 13,268	\$ 11,083	\$ 8,405	\$ 6,436	\$ 4,288
• Percent increase from previous year	20%	32%	31%	50%	33%
Earnings per share (b)	\$ 0.65	\$ 0.55	\$ 0.47	\$ 0.38	\$ 0.26
• Percent increase from previous year	18%	17%	24%	46%	24%

(a) The financials have been restated to reflect the merger of Instacom, Inc. effective October 28, 1983.

(b) Restated to reflect a two-for-one stock split effective June 7, 1983.

- Comdata management attributes growth in revenue and net income over the past three years primarily to the increased number of both trucking and credit card processing transactions.
 - In 1984 Comdata processed 15.2 million funds transfer transactions, a 36% increase over 1983 transactions of 11.2 million. Credit card transactions accounted for 1.5 million of the transfers, a 79% increase over the previous year.
 - Revenue per funds transfer transaction declined 12% from \$4.42 in 1983 to \$3.88 in 1984. The decline was due primarily to competitive pricing pressures.
- Revenue for the three months ending March 31, 1985 reach \$22.4 million, a 15% increase over revenue of \$19.4 million for the same period in 1984. Net income rose 11% to \$3.4 million for this period from \$3.1 million in the first quarter of 1984.
- As of December 31, 1984, Comdata had 1,150 employees.
- Major competition for funds transfer services to the trucking industry comes from Western Union and FundsNet, Inc. Competition for credit card holder

funds transfer services comes from FundsNet and companies such as American Express which issue credit cards or travelers checks. Check guarantee competitors include Telecredit, Telecheck, and Comp-U-Check.

KEY PRODUCTS AND SERVICES

- One hundred percent of Comdata's 1984 revenue was derived from processing services. Comdata provides money-transfer services to the trucking industry and credit card holders through approximately 7,000 truckstops, motels, resort hotels, and casinos. Check authorization and guaranty services are provided to retail establishments. A three-year summary of source of revenue follows (\$ millions):

	1984		1983		1982	
	<u>Revenue</u>	<u>Percent of Total</u>	<u>Revenue</u>	<u>Percent of Total</u>	<u>Revenue</u>	<u>Percent of Total</u>
Funds transfer	\$59.2	73%	\$49.7	78%	\$37.6	90%
Permit transfer	4.6	6	4.6	7	3.9	9
Check verification, authorization, and guaranty	14.8	18	8.1	13	0.3	1
Freight shipment interchange services and other	<u>2.2</u>	<u>3</u>	<u>1.0</u>	<u>2</u>	<u>-</u>	<u>-</u>
Total	\$80.8	100%	\$63.4	100%	\$41.8	100%

- Sixty percent of Comdata's 1984 revenue was derived from processing services to the transportation industry through its Comchek® or Express Comchek funds transfer services and its fuel purchase program, permit transfer program, and shipment interchange program.

- The original Comchek® Service was introduced in 1972.

- The request for transfer of funds to a truck driver is made through a Comchek Service Center to Comdata. Comdata verifies the trucking company's credit and notifies the Service Center as to the amount and recipient of the requested draft.
- Once the driver provides the prescribed identification, the Service Center calls Comdata to obtain an authorization number for the requested draft. The driver then endorses the draft in exchange for cash.

- . Trucking company customers are charged an agreed fee per transaction that ranges in most cases from \$3.25 to \$6.50. The Service Center deposits the draft in its bank account. The trucking company remits the amount of the Comchek draft plus the service fee by wire transfer or check to Comdata.
- Express Comchek, introduced in 1977, increases the speed and reduces communication expense of money transfers.
 - . The truck driver is furnished with a supply of blank Comchek drafts. Upon request, he is given an express code by his dispatcher that contains the trucking company's identity and the dollar amount the driver is authorized to obtain.
 - . These codes are generated by computer and continuously supplied by Comdata to certain of its trucking company customers. The driver enters other specified information on the Comchek draft and presents it to a Service Center, which then calls Comdata for a transaction authorization number. Upon completion of this procedure, the driver may obtain cash in exchange for the draft.
- In mid-1981 Comdata introduced a fuel purchase program that permits trucking companies and other transportation customers to obtain cash discounts on fuel purchases through an identification card system provided by Comdata.
 - . The driver presents his card to the gas station cashier who then calls Comdata to relate the identification number and relevant fuel purchase information.
 - . The operator gives the cashier an authorization number for a Comchek draft to be made payable to the Service Center and driver for the amount of fuel purchased.
 - . Trucking company clients are notified the following day of all transactions. Remittances are forwarded to Comdata via check or wire transfer.
 - . Comdata maintains an on-line data base of current fuel prices for all Service Centers that is updated each time a customer makes a fuel purchase.
 - . In 1984 Comdata processed 5.9 million fuel purchase transactions producing \$13.9 million in revenue, a 42% increase over 1983 revenue of \$9.8 million on 3.5 million transactions.
- Comdata offers a permit service to clients requiring special regulatory permits to transport goods within certain states.

- Comdata determines which permits are required and electronically transmits them to agent or customer terminal locations where they can be printed out and obtained by the truck driver.
 - The transmission equipment is owned by Comdata and is typically placed in state permit-issuing authorities' offices and in truck stops close to state borders.
 - Comdata currently provides these services to over 2,000 clients. The permit service is regarded as a convenience to existing funds transfer customers and as a service to attract new customers. In 1984 Comdata derived \$4.6 million in revenue from this service.
- In April 1983 Comdata introduced its COMVOY shipment interchange program which allows shippers and carriers to electronically match shipments with available cargo space on trucks going to the required destination. This service generated \$2.2 million in revenue for 1984.
- Twenty-two percent of 1984 revenue (\$17.5 million) was derived from funds transfer services provided to individual credit card holders through Comdata Service Centers located at truckstops, gambling casinos, motels, hotels, or college campuses.
 - The amount of cash received by the card holder is charged, along with Comdata's service fee, to the individual's MasterCard® or VISA® account. The minimum service fee charged by Comdata for this type of transaction is \$5.75 and increases to \$60.50 for a transfer of \$1,500. Authorization of the amount requested is confirmed by means of computer terminals at the Comdata Data center which access National Data Corporation's MasterCard and VISA authorization file data base. After authorization, the requested amount is made available by the service center using a Comchek.
 - Comdata's funds transfer service is available in over 138 casinos and over 50 racetracks in Las Vegas, Reno, Tahoe, Atlantic City, and Nassau. Over 1.5 million transactions were completed in 1984, an increase of 74% over 1983.
 - Approximately 300 hotels use Comdata's reservation guarantee service, through which individuals prepay for their accommodation to guarantee a reservation.
 - In April 1983 Comdata announced the availability of a credit card magnetic stripe reader that sends information on-line to the host computer.
 - The readers reduce communications time from an average of 90 seconds to approximately 8 seconds, significantly reducing costs.

- . Magnetic stripe readers have been installed in approximately 1,200 service centers since their introduction.
- Eighteen percent of Comdata's 1984 revenue (\$14.8 million) was derived from check authorization and guaranty services provided by the company's subsidiaries Instacom Cashex, Inc. (Cashex) and Instacom Check Systems, Inc.
 - Cashex, acquired in 1983 with the Instacom merger, now represents a network of approximately 1,700 on-line computer terminals located in over 770 supermarkets and other retail establishments in the St. Louis (MO) metropolitan area and California.
 - . The Cashex check authorization service allows the retailer on-line access to data files concerning the check writer. The check is reviewed against the Cashex bad check information and then authorized.
 - . The Cashex check guaranty service involves issuing customers a Cashex card which is inserted along with the check and a personal ID number into a terminal which transmits the data to an on-line computer. The computer contains data utilized to authorize the check for cashing by causing an authorization code to be printed on the back of the check. The check is guaranteed without recourse to the retailer.
 - Comdata's check verification program, initiated in July 1982, is marketed by Instacom Check Systems, Inc. to retail establishments such as convenience stores, supermarkets, drug stores, and department stores in Texas and is based upon a data file containing information on individuals with a history of passing bad checks.

INDUSTRY MARKETS

- Comdata's 1984 revenue was derived as follows:

Trucking industry	60%
Credit card holders	22
Retail establishments	<u>18</u>
	100%

GEOGRAPHIC MARKETS

- Virtually all of Comdata's 1984 revenue was derived from the U.S. Less than 1% of revenue was derived from funds transfer services provided to casinos in the Bahamas.

COMPUTER HARDWARE AND SOFTWARE

- Two IBM 4341s are installed at Comdata's headquarters in Nashville. Six Tandem NonStop 11s are installed in Dallas.
- Comdata Service Centers access the Nashville data center via 78 inward and 30 outward WATS lines. The Dallas center is accessed via 66 inbound and 21 outbound WATS lines.
- Check verification clients access the mainframe via local dial-up.

COMPANY PROFILE

TELECREDIT, INC.

1901 Avenue of the Stars
Los Angeles, CA 90067
(213) 277-4061

Lee A. Ault, Chairman and CEO
Louis P. Buglioli, President
Public Corporation, OTC
Total Employees: 875
Total Revenue, Fiscal Year End
4/30/84: \$70,827,000
Computer Services Revenue:
\$67,814,000

THE COMPANY

- Telecredit, Inc., founded in 1961, provides on-line payment services that facilitate the financial exchange between buyers and sellers at the point of sale.
 - Principal services include check authorization, card processing, a consumer card service (Honest Face^{T.M.}), and computerized letter collection services.
 - Other services include computerized "signaturizing" of consumer products and patent licensing.
- Telecredit's fiscal 1984 revenue reached \$70.8 million, a 15% increase over fiscal 1983 revenue of \$61.5 million. Net income rose 14%, from \$4.2 million in fiscal 1983, to \$4.8 million in fiscal 1984. A five-year financial summary follows:

TELECREDIT, INC.
FIVE-YEAR FINANCIAL SUMMARY
(\$ thousands, except per share data)

ITEM \ FISCAL YEAR	4/84	4/83	4/82	4/81	4/80
Revenue	\$ 70,827	\$ 61,535	\$ 58,445	\$ 46,004	\$ 38,582
• Percent increase from previous year	15%	5%	27%	19%	21%
Income before taxes	\$ 9,218	\$ 7,569	\$ 5,751	\$ 5,058	\$ 1,011
• Percent increase (decrease) from previous year	22%	32%	14%	400%	(61%)
Net income	\$ 4,809	\$ 4,215	\$ 3,330	\$ 2,747	\$ 741
• Percent increase (decrease) from previous year	14%	27%	21%	271%	(50%)
Earnings per share	\$ 1.00	\$ 0.91	\$ 0.77	\$ 0.74	\$ 0.21
• Percent increase (decrease) from previous year	10%	18%	4%	252%	(49%)

- On January 4, 1984, Telecredit acquired Light Signatures, Inc. (LSI) for a total purchase price of approximately \$14.9 million.
 - In the merger of LSI into a new wholly owned subsidiary, Telecredit issued to the shareholders of LSI 446,250 shares of its common stock and made cash payments of \$5,117,350. Previously, Telecredit had owned a substantial minority position in LSI, for which it paid \$4,255,000.
 - LSI has developed a computer-based system to authenticate products and documents and protect against counterfeiting.
 - Prior to the acquisition, LSI was in the development stage and had not generated significant revenues. As of December 31, 1983, LSI had an accumulated deficit of approximately \$3.7 million.
 - LSI had approximately 35 employees at the time of the acquisition.
- During 1981 and 1982 Telecredit acquired 22% (384,267 shares of common stock) of DMC Systems, Inc. for a total cost of \$1,014,000.
 - DMC manufactures terminals and microcomputer systems, including the point-of-sale terminals used by Telecredit.

TELECREDIT, INC.

- Due to continuing operating losses and the level of sales of DMC, Telecredit wrote off its remaining investment in DMC during fiscal 1983.
- In June 1984 DMC shareholders sold all of the outstanding common stock of DMC to Equatorial Communications Company (ECC) for \$2 million in cash and ECC common stock.
 - In the sale Telecredit received 35,798 shares of ECC common stock worth approximately \$780,000. In August 1984 Telecredit sold 26,848 of these shares for \$631,000 and retained 8,950 shares currently valued at approximately \$152,000.
 - During fiscal 1984, 1983, and 1982, Telecredit purchased approximately \$931,000, \$1.7 million, and \$992,000, respectively, of point-of-sale merchant terminals and other peripheral equipment and design services from DMC.
- Revenue for the nine months ending January 31, 1985 was \$63.7 million, a 23% increase over \$51.9 million for the same period in 1984. Net income for the period declined 10% from \$3.7 million in 1984 to \$3.3 million in 1985 and includes a nonrecurring gain of \$382,000 from the sale of DMC stock in August.
- As of April 30, 1984, Telecredit had 875 employees, segmented as follows:

Sales and service	247
Computer operations	261
Executive and administration	216
Part-time employees	110
LSI (full- and part-time)	<u>41</u>
	875
- Major competitors for check authorization services include Telecheck Services Inc. (Tymshare), Comp-U-Check Inc., and JBS Associates Inc. In card processing services, Telecredit competes with First Data Resources Inc., commercial banks, and associations owned by member banks.

KEY PRODUCTS AND SERVICES

- A three-year summary of Telecredit's source of revenue follows (\$ thousands):

	4/84	4/83	4/82
Payment services processing			
• Check purchase (authorization)	\$ 38,574	\$ 33,242	\$ 32,312
• Honest Face	3,760	3,229	1,872
• Credit and debit card	24,199	20,646	19,500
• Other	<u>1,281</u>	<u>1,512</u>	<u>1,963</u>
	\$ 67,814	\$ 58,629	\$ 55,647
• Percent increase from previous year	16%	5%	26%
Light Signature Services	\$ 316	-	-
Rental and other income	\$ 807	\$ 584	\$ 265
• Percent increase (decrease) from previous year	38%	120%	(55%)
Interest income	\$ 1,890	\$ 2,322	\$ 2,533
• Percent increase (decrease) from previous year	(19%)	(8%)	(120%)
Total	\$ 70,827	\$ 61,535	\$ 58,445

- Payment services operating earnings, net of corporate expenses, and other income were \$8.4 million, \$6.2 million, and \$3.7 million in fiscal 1984, 1983, and 1982, respectively.
- Light Signature Services had operating losses of \$960,000 in 1984, primarily as a result of its development expenditures.
- Telecredit is principally engaged in providing payment services through a national on-line telecommunications network and computerized data bases.
 - Authorization of check, credit card, and debit card transactions is available to customers either by telephone or through point-of-sale terminals.
 - Telecredit also provides card transaction processing services in connection with various credit and debit cards and collection services.

- Customers include consumers, financial institutions, retail merchants, automobile dealers, oil companies, car rental companies, airlines, supermarkets, hospitals, hotels, and motels. More than four million payment authorization transactions are currently handled monthly for retail and bank subscribers. More than 75% are delivered through terminals, with the balance delivered from voice inquiries made through toll-free telephone lines to Telecredit's CRT operators.
- Check purchase (authorization) services provided by Telecredit include the following:
 - The Basic Service to merchant subscribers is provided directly to national, regional, and local merchants through telephone and point-of-sale terminals and is currently the most significant of the authorization services offered.
 - Telecredit's computers contain a data base developed from information provided by its subscribers that can be queried 24 hours a day, seven days a week. The information, indexed by driver's license numbers, includes check-cashing histories and is used in making check authorization decisions.
 - Telecredit agrees to purchase from subscribers at face value (or a lesser amount for which authorization has been provided) all returned checks it has approved. Telecredit does not normally agree to purchase checks if the face value exceeds \$1,500.
 - Subscribers are billed monthly based on the volume and dollar amount of authorization inquiries.
 - As part of its Basic Service, Telecredit had been marketing its own point-of-sale terminals to merchants principally outside of California.
 - Telecredit instituted a major marketing effort in 1982 directed toward high-volume national accounts with emphasis on providing authorization services via electronic cash registers. Major accounts have been signed with Gordon's Jewelers, Target Stores division of Dayton Hudson, Macy's, T.J. Maxx, Hertz, Avis, Ryder Truck, Marriott, Sheraton, Hyatt, Toys "R" Us, and The Broadway department stores.
 - Check authorization services are also provided by Telecredit through point-of-sale terminal programs sponsored by banks and other financial institutions and associations.
 - Telecredit contracts with institutions to make its data base available and to provide the support necessary for the institutions to offer check authorization services to their merchants' depositors. The merchants obtain these services through a

terminal installed by a sponsoring institution and linked to that institution's computer facility.

- . Each institution is responsible for installing, operating, and maintaining its system. Queries go to the Telecredit data base without operator intervention.
- . Other Telecredit services include returned check claims processing, telephone backup, computer operations assistance, consumer inquiry support, and Fair Credit Act reporting.
- . Clients include American Express, Bank of America, Chase Manhattan Bank, First National Bank of Chicago, Security Pacific Bank, Wells Fargo Bank, Mellon Bank, Valley National Bank, Continental Illinois Bank, and Harris Trust and Savings Bank.
- . On June 30, 1984 Telecredit operated point-of-sale terminal programs in conjunction with 71 institutions using approximately 10,500 point-of-sale terminals.
- During fiscal 1984 Telecredit introduced the Check/Management Information Service (C/MIS). For an additional fee, Telecredit subscribers can receive management information reports that analyze the efficiency and impact of electronic delivery of check authorization services at the point of sale.
- Honest Face is a proprietary card-based check authorization service that provides consumers with ready check acceptance at Atlanta-area grocery and other retail stores.
 - Honest Face was acquired by Telecredit from the First National Bank of Atlanta in July 1981 for approximately \$3.1 million.
 - The Honest Face system uses a plastic card in conjunction with customer-operated electronic terminals that are owned by Telecredit and linked to a central authorization center to approve checks written by cardholders at the point of sale.
 - Currently there are approximately 500,000 consumers who have been issued Honest Face cards. Approximately 300 Atlanta-area grocery stores and several hundred other retail outlets use the Honest Face system.
 - Revenues are realized primarily from cardholder fees, terminal rentals, and merchant transaction fees. In March 1984 the annual consumer cardholder fee was raised from \$5.00 to \$7.50. Cardholders who were initially issued their Honest Face cards by the First National Bank of Atlanta are charged an annual fee of \$5.00.

- Telecredit processes approximately 16 million transactions annually through the Honest Face terminals.
- Telecredit is currently developing enhancements to the system, including debit card features.
- Telecredit's Welcome Check Card program, a similar service introduced in 1978, was discontinued during 1982.
- Telecredit provides credit and debit card processing services in connection with MasterCard, VISA, and American Express transactions.
 - Card transaction processing services include authorization, data processing for the settlement and clearing of the credit and debit card transactions, preparation of monthly cardholder billing statements, embossing and encoding of cards, and receipt and processing of cardholder payments. Telecredit also maintains a customer service department, trains merchants in processing card sales transactions, and provides merchants with card supplies.
 - In a typical credit card transaction, a merchant will deposit a credit card sales slip with its bank and will receive immediate credit for the amount of the purchase less a certain discount. The sales slip is then transmitted through the national processing centers of MasterCard or VISA either by the bank or by a processor, such as Telecredit, to the bank or other institution that issued the card. The batching and routing of these slips, and the entering and transmission of electronic data to debit and credit the accounts of the various financial institutions and other entities involved is an essential part of transaction processing. Telecredit is compensated by retaining a part of the merchant discount applicable to certain transactions and by charging fees on each transaction processed.
 - The card-processing services are provided primarily to banks, credit unions, savings and loan associations, and national merchants. Clients also include merchants whose card transactions are processed by Telecredit through an arrangement with the merchants' bank.
 - As processor for Payment Systems for Credit Unions (PSCU), a trade association based in Florida, Telecredit considers itself a leader in providing card services to credit unions. The card services furnished to credit unions are an increasingly significant source of revenue.
 - Currently, Telecredit provides transaction processing services to more than 325 credit unions nationally which have more than 560,000 cardholders, up from only 110 credit unions three years ago.
 - The agreement with PSCU is for a one-year term but is automatically extended for consecutive one-year terms unless either

party gives the other party six-months prior written notice of its decision to terminate the agreement.

- These services represent approximately 8% of fiscal 1984 payment service revenues.
- Telecredit performs services for Financial Transaction Systems, Inc. (FTSI), formerly Florida Credit Service Center, Inc., a Florida non-profit bank service corporation with more than 90 member banks. FTSI member banks currently have approximately 96,000 cardholders.
 - The agreement, which expires in 1986, has two options to renew for three years each.
 - A significant portion of Telecredit's revenues from card transaction processing services are attributable either to services performed for merchants depositing with a member of FTSI or banks affiliated with FTSI, or to transactions involving cards issued by the member banks.
 - These services represent approximately 16% of fiscal 1984 payment service revenues.
- Telecredit offers a collection letter service that assists subscribers in the collection of dishonored checks and uncollected receivables. Collection letters are generated by Telecredit's data processing equipment and are based on information transmitted by the creditor and information contained in Telecredit's own data base. The collection letter service is provided primarily in California, and revenues from this service have not been significant to date.
- Through Light Signatures, Inc. (LSI), Telecredit provides merchandise validation and information services.
 - LSI has contracted with several leading manufacturers and licensors of consumer products, including Levi Strauss & Co., Anheuser-Busch, Chrysalis Records, and Ocean Pacific to protect their products from counterfeiting and other commercial abuse by "signaturizing" their labels and/or packaging. Revenues from Levi Strauss & Co. currently account for approximately 61% of Light Signature revenue.
 - Potential new applications for this technology include documents of value (stock certificates, bonds, etc.), credit and debit cards, food stamps and other entitlement programs, and identification cards.
 - New high-speed equipment, scheduled for installation later this year, will result in lower unit costs and higher profitability for LSI.
- Other noncomputer service revenue includes income from property leases, patent licensing, and interest income.

INDUSTRY MARKETS

- Telecredit's fiscal 1984 computer services revenue was derived primarily from the retail industry. The company's clients include retail merchants, automobile dealers, oil companies, supermarkets, hospitals, hotels, motels, airlines, car rental companies, financial institutions, and consumers.
- The company's target market for its check purchase (authorization) services is retailers and travel and entertainment companies.
- The target market for the Honest Face program is the metropolitan Atlanta-area retail industry.
- The target market for card-processing services is small- to medium-sized financial institutions that issue credit and debit cards and retail merchants that accept credit and debit cards in payment for goods and services.

GEOGRAPHIC MARKETS

- Virtually 100% of Telecredit's fiscal 1984 revenue was derived from the U.S.
 - The heaviest concentration of clients are in major metropolitan areas across the U.S., with emphasis in California and Florida.
- Telecredit has principal branch offices in Atlanta and Tampa and additional sales/support offices in most major metropolitan areas.
- Light Signatures, Inc. is headquartered in Los Angeles.

COMPUTER HARDWARE AND SOFTWARE

- Telecredit operates computer facilities in Los Angeles, Atlanta, and Tampa.
 - Los Angeles.
 - 5 Tandem NonStop computers, operating under ACI Net and Tandem software.
 - 1 IBM 370/158, operating under OS/VSI.
 - Tampa.
 - 7 Tandem NonStop computers, operating under ACI Net and Tandem software.
 - 2 IBM 370/158s, operating under OS/VSI.
 - Atlanta.
 - 1 IBM System/7.

TELECREDIT, INC.

- LSI uses an IBM Series I, augmented by an IBM 370/158, operating under OS/VSI, and five Signa I prototype production machines.
- Telecredit is considering establishing regional processing centers in selected areas nationwide, using Tandem computers, and may develop economical alternative means for distributed processing.

COMPANY PROFILE

FUNDSNET, INC.
385 Nordhoff Place
Englewood, NJ 07631
(201) 569-7764

Frederick Galland, Chairman
Kenneth Payne, President
Public Corporation, OTC
Total Employees: 190
Total Revenue, Fiscal Year End
12/31/84: \$11,832,428

THE COMPANY

- FundsNet, Inc., founded in 1980, provides electronic funds processing and transfer services to the transportation industry and the consumer public, and provides credit card processing services to retail establishments and the travel and entertainment industry.
 - FundsNet was incorporated in Delaware on October 29, 1980 for the purpose of acquiring certain assets and liabilities of the non-banking electronic funds transfer business of the Dial-A-Check Division of Graphic Scanning Corp. (Graphic).
 - On February 19, 1981 FundsNet made a public offering of 2 million shares of common stock. Net proceeds of \$11.8 million from this offering were used to acquire, as of February 25, 1981, the Dial-A-Check Division for \$9.5 million in cash and \$2.3 million in a convertible subordinated note. The balance of \$2.3 million was retained by FundsNet for general corporate purposes, including working capital.
- 1984 revenue reached \$11.8 million, a 25% increase over 1983 revenue of \$9.5 million. Net income decreased 80% from \$617,914 in 1983 to \$121,776 in 1984. A four-year financial summary follows:

FUNDSNET, INC.
 FOUR-YEAR FINANCIAL SUMMARY
 (\$ thousands, except per share data)

ITEM \ FISCAL YEAR	1984	1983	1982	Pro Forma 1981 (a)
Revenue	\$ 11,833	\$ 9,473	\$ 7,307	\$ 5,010
• Percent increase from previous year	25%	30%	46%	47%
Income (loss) before taxes	\$ (112)	\$ 1,047	\$ 713	\$ 481
• Percent increase (decrease) from previous year	(111%)	47%	48%	21%
Net income	\$ 122	\$ 618	\$ 373	\$ 287
• Percent increase (decrease) from previous year	(80%)	66%	30%	30%
Earnings Per share	\$ 0.04	\$ 0.22	\$ 0.13	\$ 0.10
• Percent increase (decrease) from previous year	(82%)	69%	30%	25%

(a) The pro forma figures have been adjusted to present the operating results of the period as if FundsNet, Inc. had been formed and Dial-A-Check Division acquired on January 1, 1980.

- FundsNet management attributes growth in revenue to increased funds transfers to the consumer market (this portion of the business increased in revenue 35% over 1983) and to improved services and methods of operation provided to the transportation industry.
- Profit margins declined due to price competition within the transportation industry, higher communications costs due to maintaining duplicate systems during part of the year while new procedures were implemented, and to general increases in telecommunications costs. Margins were also affected by higher per-transaction commissions paid to service centers and increased credit card processing fees due to higher volume of transactions.
- As of March 31, 1984, FundsNet completed the installation of its computer systems, including the expanded Tandem Non-Stop II computer and related software, purchased from Graphic for \$1.6

million plus \$800,000 for the operating rights to the communications software systems and procedures previously licensed from Graphic.

- During 1984 FundsNet completed 2,060,000 funds transfers aggregating \$526 million compared to 1,410,000 transfers for \$416 million in 1983. The average amount per transfer in 1984 was \$254 at an average fee of \$5.68 per transaction, compared to \$295 per average transfer at an average fee of \$6.71 in 1983.
- As of December 31, 1984 the company had 185 employees. The company currently has 193 employees segmented as follows:

Marketing/sales	19
Administrative and technical	50
Telephone and computer operations	112
Executive and managerial	<u>12</u>
	193
- Major competitors in the electronic funds transfer service include Western Union and Comdata Network, Inc. Competition for credit cardholder funds transfer services includes Comdata Network and companies such as American Express that issue credit cards or travelers checks. Providers of automatic teller machine services and sellers of money orders may also be considered competitors. Check guarantee competitors include McDonnell Douglas Information Systems Group and Automatic Data Processing.

KEY PRODUCTS AND SERVICES

- One hundred percent of FundsNet's 1984 revenue was derived from processing services. FundsNet provides electronic funds processing and transfer services to the transportation industry and to the consumer public at non-banking leisure establishments such as hotels, casinos, and race tracks. Credit card processing services are provided to banks and retail outlets.
- Forty-two percent of FundsNet's 1984 revenue was derived from the trucking industry under its Dial-A-Check[®], Action Check^{T.M.}, and National Purchasing System services.
 - Dial-A-Check[®], developed in 1973 while the company was still a division of Graphic, offers trucking companies a method of transferring funds to their drivers while on their designated routes. The original service was provided to transportation companies with pre-established credit in the following manner:
 - The trucking company maps the drivers route and time schedule by selecting service centers where funds are made available. The trucking company then contacts the FundsNet operation center in Dallas (TX) to request authorization of a funds

transfer. Upon verification of credit status and authenticity of transaction, the center notifies the service center as to the amount and recipient of the requested draft.

- . Once the driver provides the prescribed identification, the Service Center issues the driver a draft for endorsement. The driver may either cash the draft via the issuing agent or at another location.
- . The trucking company customers are charged an agreed fee per transaction based on the dollar amount of the draft. Average per transaction fees range from \$2.00 to \$6.00. The trucking company remits the amount of the Dial-A-Check draft plus the transaction fee by wire transfer or check to FundsNet.
- Action Check^{T.M.}, introduced in 1978, is an enhancement to the basic Dial-A-Check service. With this service the trucking company provides its drivers with pre-authorized coded vouchers, for prescribed dollar amounts, for presentation at any service center. It allows the driver to obtain funds without requiring the trucking company dispatcher to contact FundsNet.
 - . Service centers function as independent contractors and their agents are not affiliated with FundsNet.
 - . An initiation fee is charged to new truck stops who want to offer the funds transfer service.
- National Purchasing System^{T.M.}, introduced in June 1983, makes use of the Dial-A-Check via FundsNet plastic identification cards that are issued by transportation companies to their drivers. Drivers with activated cards can present the card to the cashier at any truck stop and upon verification from FundsNet by the operator, a Dial-A-Check is authorized for payment of vehicle services.
 - . Trucking companies can preauthorize purchases by entering their purchase order in the Dial-A-Check computer. When payment is made it will automatically receive approval. Drivers can also be located by a call to FundsNet's computer center.
 - . The trucking company receives daily, weekly, and monthly reports summarizing all purchasing activity. The reports serve as management tools for cost controls and tax reports.
 - . In 1984 FundsNet expanded the service to allow trucking companies to pre-set daily, weekly, or trip expense limits, as well as to designate grade of fuel, type of service, and amount of accessory purchase allowed. Drivers can make purchases based on these pre-set credit limits.

- An enhancement to the Dial-A-Check service, introduced in 1984, allows trucking companies to provide their drivers with blank drafts which may be cashed at any truck stop or other location honoring FundsNet drafts.
 - Through the use of special Dial-A-Check codes the driver can make his own transfer of funds to his wife or anyone in the possession of the drafts.
 - The establishment cashing the check calls the FundsNet toll-free number to verify the authenticity of the coded authorization number supplied by the driver.
- FundsNet also provides a permit service which provides temporary fuel and oversize and overdimensional truck permits required for certain interstate traffic before a truck can use a state's roadway.
- Fifty-six percent of FundsNet 1984 revenue was derived from funds transfer services to the consumer public through its Cash Call^{T.M.} services offered at approximately 125 resort hotels, race tracks, casinos, camp grounds, and jai alai frontons across the U.S. as well as in Puerto Rico and the Bahamas.
 - The consumer can obtain a cash transfer by utilizing in-place terminals or terminals installed by FundsNet at the establishment's service center. The cash obtained is charged to the individual's VISA[®] or Master Card[®] account along with a service fee. The service fee ranges from \$11.50 for a \$100 transfer to \$49.00 for a transfer of \$1,000.
 - Authorization of the amount requested is confirmed by means of computer terminals at the FundsNet Data Center which access the VISA and MasterCard files of the various banks with which it has such agreements.
 - An additional service, ResNet^{T.M.}, allows individuals to transmit deposits using their credit card to guarantee hotel reservations.
 - The company's Cash Call^{T.M.} II System, introduced in 1983, provides point-of-sale terminals for sending on-line information to the host computer facilitating immediate authorization, credit card reading, and security checking.
 - In August 1983 FundsNet announced an emergency cash transfer system for travelers holding MasterCard or Visa cards issued by Chase Manhattan Bank, N.A. Travelers may obtain funds for services 7 days a week, 24 hours a day at over 4,000 locations.
 - The card holder contacts the FundsNet action-line via a toll-free number and is directed to the nearest center where his credit card will be accepted.

- The service is being expanded to other credit card suppliers who are charged a monthly maintenance fee and a one-time implementation charge.
- In April 1984 FundsNet announced the establishment of its Merchant Services Division which markets credit card processing services to retailers, mail order houses, hotels and motels, and the entertainment industry.
 - The Merchant Services include the clearing of credit/debit card transactions, check guarantee programs, funds transfer systems, and the development of in-store financial centers.
 - The division has developed a counterfeit credit card and currency detector, Merchant Alert[™], which was implemented during the first quarter of 1985.

INDUSTRY MARKETS

- FundsNet's 1984 revenue was derived from the following industry markets:

Transportation industry	42%
Credit card holders	56
Retail distribution	<u>2</u>
	100%

GEOGRAPHIC MARKETS

- Virtually all of FundsNet's 1984 revenue was derived from the U.S. Less than 1% was derived from funds transfer services provided in casinos in Puerto Rico and the Bahamas.

COMPUTER HARDWARE AND SOFTWARE

- FundsNet's data center located in Dallas (TX) has four Tandem NonStop II computers running under the company's proprietary software.
- FundsNet service centers access the data center via point-of-sale terminals, Telex, CRTs, facsimile equipment, and direct-dial telephones.

COMPANY PROFILE

COMP-U-CHECK, INC.
16250 Northland Drive
Southfield, MI 48075
(313) 569-1448

Ronald T. Hill, President and
Chief Operating Officer
Subsidiary of OTF Equities, Inc.
Total Employees: 88
Total Revenue, Fiscal Year End
11/30/84: \$6,642,160

THE COMPANY

- Comp-U-Check, founded in 1967, provides check guarantee, verification, and collection processing services primarily to the retail industry.
 - On November 1, 1982 Comp-U-Check was acquired by OTF Equities, Inc.
- Comp-U-Check's fiscal 1984 revenue reached \$6.6 million, a 12% increase over fiscal 1983 revenue of \$5.9 million. Net income rose 9% from \$360,958 in fiscal 1983 to \$393,642 in fiscal 1984. A five-year financial summary follows:

COMP-U-CHECK, INC. FIVE-YEAR FINANCIAL SUMMARY (\$ thousands, except per share data)

ITEM \ FISCAL YEAR	11/84	11/83	11/82	11/81	11/80
Revenue	\$ 6,642	\$ 5,907	\$ 4,852	\$ 4,028	\$ 3,406
. Percent increase from previous year	12%	22%	20%	18%	19%
Income before taxes	\$ 767	\$ 547	\$ 360	\$ 243	\$ 82
. Percent increase from previous year	40%	52%	49%	195%	220%
Net income	\$ 394	\$ 361	\$ 308	\$ 243	\$ 82
. Percent increase from previous year	9%	17%	27%	195%	220%
Earnings per share	\$ 0.30	\$ 0.28	\$ 0.24	\$ 0.19	\$ 0.07
. Percent increase from previous year	7%	17%	26%	171%	217%

- Revenue for the three months ending February 28, 1985 was nearly \$2 million, a 26% increase over approximately \$1.6 million for the same period in 1984. Net income for the period rose 34% from \$80,164 in 1983 to \$107,645 in 1984.
- As of February 15, 1985, Comp-U-Check had 55 full time employees and 33 part time employees. Comp-U-Check also hires additional employees to assist in operations at the peak seasons of Comp-U-Check's business.
- Principal competitors include Telecredit, Inc., and TeleCheck Services, Inc. (McDonnell Douglas Information Systems Group).

KEY PRODUCTS AND SERVICES

- Approximately 81% of fiscal 1984 revenue was derived from check guarantee processing services. Check verification services accounted for approximately 7%. The remaining 12% was derived from collection agency services, the FORBANK service, and other services.
- SureCheck is a check guarantee service provided to retailers and banks through operator assisted phone calls, audio response units, point of sale terminals, and direct computer-to-computer communications.
 - Comp-U-Check maintains a data base of information concerning worthless checks, checks with insufficient funds, and other similar information, including information relating to stolen or counterfeit checks. The customer's name and driver's license number can be used to search the company's information file.
 - The information is voluntarily provided on a continuing basis to Comp-U-Check from subscribers to the guarantee service, law enforcement authorities, business and retail associations, and other sources who are not Comp-U-Check subscribers.
 - After searching its data base, Comp-U-Check may or may not guarantee the check. If a guaranteed check is dishonored Comp-U-Check must reimburse the subscriber the face amount of the check.
 - Subscribers are usually charged a percentage, based on volume, of the face amount of the checks.
 - The total value of checks guaranteed by Comp-U-Check in fiscal 1984 was over \$300 million.
- Take-A-Check is Comp-U-Check's check verification service. Comp-U-Check supplies subscribers with information in a coded form which allows the subscriber to decide whether or not to accept a check. Comp-U-Check does not guarantee the subscriber against losses on checks under the Take-A-Check service.

- Comp-U-Check provides the information in coded form through various means including a printed directory, computer tapes, operator assisted phone calls, touch tone audio response units, direct computer-to-computer communications, and point of sale terminals.
- Subscribers are charged a monthly fee for information delivered in directory or computer tape form, and a charge per call for the other forms of delivery of information.
- Comp-U-Check offers a service to banks under the trade name FORBANK. FORBANK allows customers to access Comp-U-Check's online data base of checking accounts that are closed for cause.
 - The data base information is voluntarily submitted by participating banks and allows the FORBANK customers to evaluate applications for new accounts and to obtain information on applicants who have previously abused accounts.
 - Pricing is based on a fixed fee per inquiry.
 - The company's FORBANK service is offered primarily in the Great Lakes region of the U.S.
- Comp-U-Check provides collection agency services through its collection division, Comp-U-Check Collections.
 - Comp-U-Check Collections collects checks and accounts receivable for customers on a contingent fee basis. It also collects checks purchased by Comp-U-Check through its SureCheck service. Comp-U-Check Collections also markets collection letters, attorney's letters, and skip tracing services.
 - Comp-U-Check Collections serves a variety of industries including the medical, utility, education, banking and finance, and retail industries.
- In 1984 Comp-U-Check began to develop the software and computer system needed to begin marketing a private label credit card (PLCC) service.
 - Comp-U-Check plans to use its computer to authorize and process individual purchases when a retail buyer uses a merchant's private credit card. Comp-U-Check would then use the information to prepare and issue monthly billing statements to the credit card user. The company would also advance cash to its customers on credit sales processed through the PLCC system.
 - Generally, Comp-U-Check would be repaid for such advances by the purchaser of the goods from the retail merchant when the purchaser pays his monthly bill.

- In December 1984, Comp-U-Check signed a letter of intent with a Michigan-based regional chain of retail stores selling women's apparel, to provide their stores with the PLCC services. A test began in February 1985 and a contract is scheduled to be signed in the second quarter of 1985.

INDUSTRY MARKETS

- Comp-U-Check's fiscal 1984 revenue was derived primarily from the retail industry including retail merchants, supermarkets, hotels, and automobile dealers. Other clients include financial institutions, hospitals, and utility companies.
- The target market for check guarantee and verification services is large retail merchants.
- The target market for collection agency services is hospitals.
- The target market for the FORBANK service is financial institutions in the Michigan area.

GEOGRAPHIC MARKETS

- Virtually 100% of Comp-U-Check's fiscal 1984 revenue was derived from the U.S.
 - Check guarantee, check verification, and collection agency services are offered on a national basis.
 - For its FORBANK service, clients are primarily in the state of Michigan.
- Comp-U-Check has regional centers in Atlanta and Chicago.

COMPUTER HARDWARE AND SOFTWARE

- Comp-U-Check has two leased IBM 4341 computers, operating under BETACOM, installed in Southfield.
- Clients of Comp-U-Check's check guarantee and check verification services may access the Comp-U-Check data center 24 hours a day, seven days a week as follows:
 - Direct dial for operator assisted services.
 - Touch tone telephone for computer generated audio response.
 - WATS telephone lines for point-of-sale terminals.
 - Leased lines for computer-to-computer communications.

APPENDIX A: DEFINITIONS

APPENDIX A: DEFINITIONS

A. REVENUE

- All revenue and user expenditures reported are available (i.e., noncaptive) revenue, as defined below.
- CAPTIVE INFORMATION SERVICES REVENUE - Revenue received from users who are part of the same parent corporation as the vendor's.
- NONCAPTIVE INFORMATION SERVICES REVENUE - Revenue received for information services provided within the U.S. from users who are not part of the same parent corporation as the vendor.
- OTHER REVENUE - Revenue derived from lines of business other than those defined above.

B. SERVICE MODES

- PROCESSING SERVICES - Remote computing services, batch services, and processing facilities management.

- REMOTE COMPUTING SERVICES (RCS) - Provision of data processing to a user by means of terminals at the user's site(s) connected by a data communications network to the vendor's central computer.
 - . INTERACTIVE (timesharing) - Characterized by the interaction of the user with the system, primarily for problem-solving timesharing but also for data entry and transaction processing: the user is on-line to the program/files.
 - . REMOTE BATCH - Where the user hands over control of a job to the vendor's computer, which schedules job execution according to priorities and resource requirements.
- BATCH SERVICES - This includes data processing performed at vendor's sites of user programs and/or data that are physically transported (as opposed to electronically by telecommunication media) to and/or from those sites. Data entry and data output services, such as keypunching and computer output microfilm processing, are also included. Batch services include those expenditures by users who take their data to a vendor site that has a terminal connected to a remote computer for the actual processing.
- PROCESSING FACILITIES MANAGEMENT (PFM) (also referred to as "resource management" or "systems management") - The management of all or a major part of a user's data processing functions under a long-term contract (more than one year). This would include both remote computing and batch services. To qualify as PFM, the contractor must directly plan, control, and operate, the facility provided to the user, either on-site, through communications lines, or in a mixed mode.

- Processing services are further differentiated as follows:
 - Function-specific services are the processing of applications that are targeted to specific user departments (e.g., finance, personnel, sales) but cut across industry lines. Most general ledger, accounts receivable, payroll, and personnel applications fall into this category. Function-specific data base services where the vendor supplies the data base and controls access to it (although it may be owned by a third party) are included in this category. General purpose tools such as financial planning systems, linear regression packages, and other statistical routines are also included. However, when the application, tool, or data base is designed for specific industry use, then the service is industry specific.
 - Industry-specific services provide processing for particular functions or problems unique to an industry or industry group. The software is provided by the vendor either as a complete package or as an applications "tool" that the user employs to produce a unique solution. Specialty applications can be either business or scientific in orientation. Industry-specific data base services, where the vendor supplies the data base and controls access to it (although it may be owned by a third party), are also included under this category. Examples of industry-specific applications are seismic data processing, numerically controlled machine tool software development, and demand deposit accounting.
 - Utility services are those where the vendor provides access to a computer and/or communications network with basic software that enables users to develop their own problem solutions or processing systems. These basic tools include terminal-handling software, sorts, language compilers, data base management systems, information retrieval software, scientific library routines, and other systems software.

- TURNKEY SYSTEMS - An integration of systems and applications software with hardware, packaged as a single solution. The value added by the vendor is both the software and integration. Most CAD/CAM systems and many small business systems are turnkey systems. This does not include specialized hardware systems such as word processors, cash registers, and process control systems.
- Turnkey systems revenue is divided into two categories.
 - INDUSTRY-SPECIFIC, i.e., systems that serve a specific function for a given industry sector such as seismic processing systems, automobile dealer parts inventory, CAD/CAM systems, and discrete manufacturing control systems.
 - CROSS-INDUSTRY systems, i.e., systems that provide a specific function that is applicable to a wide range of industry sectors such as financial planning systems, payroll systems, and personnel management systems.
- Revenue include hardware, software, and support functions.

C. INDUSTRY-SPECIFIC TERMS

- AUDIO-RESPONSE UNIT - An Audio Response Unit receives digital data from a processor. Part of the data activates pre-selected vocabulary. Other data (primarily numeric) is converted from digital to voice. The entire message is then transmitted on a voice line.
- CHECK GUARANTEE - Check Guarantee is that process by which the services vendor guarantees that uncollectable checks will be purchased at a

pre-determined discounted value from the retailer without recourse. The vendor takes whatever action is necessary to recover funds, if any, from the consumer.

- CHECK VERIFICATION - Check Verification is a process by which the vendor advises the retailer of the likelihood that the check is good or that the check is bad based on negative data held in the vendor's data base. The retailer retains liability for uncollectable checks.
- CLEARANCE - Clearance is the process whereby retailer check deposits from the depositing bank through a clearance bank (often the Federal Reserve) to the bank on which the check was drawn.
- CREDIT CARD AUTHORIZATION - Credit Card Authorization is the process whereby the services vendor either declines authorization or approves the credit transaction within prescribed limits, or obtains, as necessary, approval from the financial institution holding the credit card account. Credit card losses are borne by the participating financial institution. Provision for credit card losses are bundled in the discount rate on credit card charge amounts the merchant pays for credit card services.
- ELECTRONIC CASH REGISTER (ECR) - An Electronic Cash Register operates as a Point-of-Sale (POS) terminal with respect to credit card authorization/check guarantee. ECRs also handle sales, data capture, balancing, and inventory control.
- INTERCHANGE NETWORK - VISA and MasterCard operate electronic switching networks that route credit card authorization messages as necessary between processing participants and financial institutions of record.
- POINT-OF-SALE (POS) TERMINAL - A terminal located at a retail outlet, such as an electronic cash register or a key pad activated credit authorization or check guarantee terminal, for handling both authorization and transaction information.

- SETTLEMENT - Settlement is the process whereby credit card transactions once balanced at the retail level are entered at the depositing bank or services vendor, sorted by the institution servicing the retailer, transmitted, and net funds due each participant determined (settled).

APPENDIX B: FORECASTS

EXHIBIT B-1

CREDIT CARD AUTHORIZATION/CHECK GUARANTEE INFORMATION SERVICES SEGMENT FORECAST: INDUSTRY SPECIFIC BY DELIVERY MODE, 1985-1990

DELIVERY MODE	(\$ Millions) 1984	1984-1985 AAGR (Percent)	DOLLAR MILLIONS						1985-1990 AAGR (Percent)
			1985	1986	1987	1988	1989	1990	
Processing Services									
● Remote Computing	\$510	17%	\$596	\$710	\$850	\$1,025	\$1,230	\$1,475	20%
VAN	60	12	69	80	95	120	145	175	20
Industry Specific Total	\$570	17%	\$665	\$790	\$945	\$1,145	\$1,375	\$1,650	20%

EXHIBIT B-2

CREDIT CARD AUTHORIZATION/CHECK GUARANTEE INFORMATION SERVICES SEGMENT FORECAST
INDUSTRY SPECIFIC BY SERVICES TYPE, 1985-1990

SERVICES TYPE	(\$ Millions) 1984	1984-1985 AAGR (Percent)	DOLLAR MILLIONS						1985-1989 AAGR (Percent)
			1985	1986	1987	1988	1989	1990	
Voice	\$227	13%	\$257	\$290	\$325	\$360	\$400	\$440	11%
Audio Response	138	15	159	185	215	245	275	310	14
Point of Sale	86	26	108	140	185	245	340	450	33
Electronic Cash Register	29	28	37	30	70	100	135	180	37
Computer to Computer	30	17	35	40	50	60	75	95	22
VAN	60	15	69	80	95	115	140	175	21
Total	\$570	17%	\$665	\$765	\$940	\$1,125	\$1,365	\$1,650	20%

EXHIBIT B-3

USER EXPENDITURES FOR CREDIT CARD AUTHORIZATION/
CHECK GUARANTEE INFORMATION SERVICES
BY INDUSTRY SECTOR IN 1985

INDUSTRY SECTOR	USER EXPENDITURES (\$ Millions)	PORTION (Percent)
Banking and Finance	\$239	36%
Retail/Distribution	211	32
Transportation	81	12
Services	97	14
Other	37	6
Total	\$665	100%

APPENDIX C: RELATED INPUT REPORTS

APPENDIX C: RELATED INPUT REPORTS

- Correspondent Bank Processing Services Markets: 1985-1990, May 1985.
- U.S. Information Services Markets, 1984-1989, Volume I - Industry-Specific Markets, December 1984.
- Market Update: Banking and Finance Information Services, 1984-1989, June 1984.
- New Processing Opportunities in Banking, July 1982.

